

OPERATING AGREEMENT

DATED: MAY 16, 2016

OPERATOR: PONDEROSA OPERATING LLC

CONTRACT AREA: SEE EXHIBIT A

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OPERATING AGREEMENT

THIS AGREEMENT, entered into by and between Ponderosa Operating LLC, hereinafter designated and referred to as “Operator”, and the signatory party or parties other than Operator, sometimes hereinafter referred to individually as “Non-Operator”, and collectively as “Non-Operators”.

WITNESSETH:

WHEREAS, the parties to this agreement are owners of Oil and Gas Leases and/or Oil and Gas Interests in the land identified in Exhibit “A”, and the parties hereto have reached an agreement to explore and develop these Leases and/or Oil and Gas Interests for the production of Oil and Gas to the extent and as hereinafter provided,

NOW, THEREFORE, it is agreed as follows:

ARTICLE I

DEFINITIONS

As used in this agreement, the following words and terms shall have the meanings here ascribed to them:

A. The term “AFE” shall mean an Authority for Expenditure prepared by a party to this agreement for the purpose of estimating the costs to be incurred in conducting an operation hereunder.

B. The term “Completion” or “Complete” shall mean a single operation intended to complete a well as a producer of Oil and Gas in one or more Zones, including, but not limited to, the setting of production casing, perforating, well stimulation and production testing conducted in such operation.

C. The term “Contract Area” shall mean all of the lands, Oil and Gas Leases and/or Oil and Gas Interests intended to be developed and operated for Oil and Gas purposes under this agreement. Such lands, Oil and Gas Leases and Oil and Gas Interests are described in Exhibit “A”.

D. The term “Deepen” shall mean a single operation whereby a well is drilled to an objective Zone below the deepest Zone in which the well was previously drilled, or below the Deepest Zone proposed in the associated AFE, whichever is the lesser.

E. The terms “Drilling Party” and “Consenting Party” shall mean a party who agrees to join in and pay its share of the cost of any operation conducted under the provisions of this agreement.

F. The term “Drilling Unit” shall mean the area fixed for the drilling of one well by order or rule of any state or federal body having authority. If a Drilling Unit is not fixed by any such rule or order, a Drilling Unit shall be the drilling unit as established by the pattern of drilling in the Contract Area unless fixed by express agreement of the Drilling Parties.

G. The term “Drillsite” shall mean the Oil and Gas Lease or Oil and Gas Interest on which a proposed well is to be located.

H. Not Used. ~~The term “Initial Well” shall mean the well required to be drilled by the parties hereto as provided in Article VI.A.~~

I. The term “Non-Consent Well” shall mean a well in which less than all parties have conducted an operation as provided in Article VI.B.2.

J. The terms “Non-Drilling Party” and “Non-Consenting Party” shall mean a party who elects not to participate in a proposed operation.

K. The term “Oil and Gas” shall mean oil, gas, casing head gas, gas condensate, and/or all other

liquid or gaseous hydrocarbons and other marketable substances produced therewith, unless an intent to limit the inclusiveness of this term is specifically stated.

L. The term “Oil and Gas Interests” or “Interests” shall mean unleased fee and mineral interests in Oil and Gas in tracts of land lying within the Contract Area which are owned by parties to this agreement.

M. The terms “Oil and Gas Lease”, “Lease” and “Leasehold” shall mean the oil and gas leases or interests therein covering tracts of land lying within the Contract Area which are owned by the parties to this agreement.

N. The term “Plug Back” shall mean a single operation whereby a deeper Zone is abandoned in order to attempt a Completion in a shallower Zone.

O. The term “Recompletion” or “Recomplete” shall mean an operation whereby a Completion in one Zone is abandoned in order to attempt a Completion in a different Zone within the existing wellbore.

P. The term “Rework” shall mean an operation conducted in the wellbore of a well after it is Completed to secure, restore, or improve production in a Zone which is currently open to production in the wellbore. Such operations include, but are not limited to, well stimulation operations but exclude any routine repair or maintenance work or drilling, Sidetracking, Deepening, Completing, Recompleting, or Plugging Back of a well.

Q. The term “Sidetrack” shall mean the directional control and intentional deviation of a well from vertical so as to change the bottom hole location unless done to straighten the hole or drill around junk in the hole to overcome other mechanical difficulties.

R. The term “Zone” shall mean a stratum of earth containing or thought to contain a common accumulation of Oil and Gas separately producible from any other common accumulation of Oil and Gas.

Unless the context otherwise clearly indicates, words used in the singular include the plural, the word “person” includes natural and artificial persons, the plural includes the singular, and any gender includes the masculine, feminine, and neuter.

ARTICLE II EXHIBITS

The following exhibits, as indicated below and attached hereto, are incorporated in and made a part hereof:

A. Exhibit “A”, shall include the following information:

- (1) Description of lands subject to this agreement,
- (2) Restrictions, if any, as to depths, formations, or substances,
- (3) Parties to agreement with addresses and telephone numbers for notice purposes,
- (4) Percentages or fractional interests of parties to this agreement,
- (5) Oil and Gas Leases and/or Oil and Gas Interests subject to this agreement,
- (6) Burdens on production.

B. Exhibit “B”, Not used

- C. Exhibit “C”, Accounting Procedure.¹
- D. Exhibit “D”, Insurance.²
- E. Exhibit “E”, Not Used.
- F. Exhibit “F”, Non-Discrimination and Certification of Non-Segregated Facilities.³
- G. Exhibit “G”, Not Used.
- H. Other: Not Used.

If any provision of any exhibit, except Exhibit “F” is inconsistent with any provision contained in the body of this agreement, the provisions in the body of this agreement shall prevail.

ARTICLE III INTERESTS OF PARTIES

A. Oil and Gas Interests:

If any party owns an Oil and Gas Interest in the Contract Area, that Interest shall be treated for all purposes of this agreement and during the term hereof as if it were covered by the form of Oil and Gas Lease attached hereto as Exhibit “B”, and the owner thereof shall be deemed to own both royalty interest in such lease and the interest of the lessee thereunder.

B. Interests of Parties in Costs and Production:

Unless changed by other provisions, all costs and liabilities incurred in operations under this agreement shall be borne and paid, and all equipment and materials acquired in operations on the Contract Area shall be owned, by the parties as their interests are set forth in Exhibit “A”. In the same manner, the parties shall also own all production of Oil and Gas from the Contract Area subject, however, to the payment of royalties and other burdens on production as described hereafter.

Regardless of which party has contributed any Oil and Gas Lease or Oil and Gas Interest on which royalty or other burdens may be payable and except as otherwise expressly provided in this agreement, each party shall pay or deliver, or cause to be paid or delivered, all burdens on its share of the production from the Contract Area up to, but not in excess of, USD 1 and shall indemnify, defend and hold the other parties free from any liability therefor. Except as otherwise expressly provided in this agreement, if any party has contributed hereto any Lease or Interest which is burdened with any royalty, overriding royalty, production payment or other burden on production in excess of the amounts stipulated above, such party so burdened shall assume and alone bear all such excess obligations and shall indemnify, defend and hold the other parties hereto harmless from any and all claims attributable to such excess burden. However, so long as the Drilling Unit for the productive Zone(s) is identical with the Contract Area, each party shall pay or deliver, or cause to be paid or delivered, all burdens on production from the Contract Area due under the terms of the Oil and Gas Lease(s) which such party has contributed to this agreement, and shall indemnify, defend and hold the other parties free from any liability therefore.

¹ To be provided by Ponderosa.

² To be provided by Ponderosa.

³ To be provided by Ponderosa.

No party shall ever be responsible, on a price basis higher than the price received by such party, to any other party's lessor or royalty owner, and if such other party's lessor or royalty owner should demand and receive settlement on a higher price basis, the party contributing the affected Lease shall bear the additional royalty burden attributable to such higher price.

Nothing contained in this Article III.B. shall be deemed an assignment or cross-assignment of interests covered hereby, and in the event two or more parties contribute to this agreement jointly owned Leases, the parties' undivided interests in said Leaseholds shall be deemed separate leasehold interests for the purposes of this agreement.

C. Subsequently Created Interests:

If any party has contributed hereto a Lease or Interest that is burdened with an assignment of production given as security for the payment of money, or if, after the date of this agreement, any party creates an overriding royalty, production payment, net profits interest, assignment of production or other burden payable out of production attributable to its working interest hereunder, such burden shall be deemed a "Subsequently Created Interest". Further, if any party has contributed hereto a Lease or Interest burdened with an overriding royalty, production payment, net profits interests, or other burden payable out of production created prior to the date of this agreement, and such burden is not shown on Exhibit "A", such burden also shall be deemed a Subsequently Created Interest to the extent such burden causes the burdens on such party's Lease or Interest to exceed the amount stipulated in Article III.B above.

The party whose interest is burdened with the Subsequently Created Interest (the "Burdened Party") shall assume and alone bear, pay and discharge the Subsequently Created Interest and shall indemnify, defend and hold harmless the other parties from and against any liability therefor. Further, if the Burdened Party fails to pay, when due, its share of expenses chargeable hereunder, all provisions of Article VII.B. shall be enforceable against the Subsequently Created Interest in the same manner as they are enforceable against the working interest of the Burdened Party. If the Burdened Party is required under this agreement to assign or relinquish to any other party, or parties, all or a portion of its working interest and/or the production attributable thereto, said other party, or parties, shall receive said assignment and/or production free and clear of said Subsequently Created Interest, and the Burdened Party shall indemnify, defend and hold harmless said other party, or parties, from any and all claims and demands for payment asserted by owners of the Subsequently Created Interest.

ARTICLE IV

TITLES

A. Title examination:

Title examination shall be made on the Drillsite of any proposed well prior to commencement of drilling operations and, if a majority in interest of the Drilling Parties so request or Operator so elects, title examination shall be made on the entire Drilling Unit, or maximum anticipated Drilling Unit, of the well. The opinion will include the ownership of the working interest, minerals, royalty, overriding royalty and production payments under the applicable Leases. Each party contributing Leases and/or Oil and Gas Interests to be included in the Drillsite or Drilling Unit, if appropriate, shall furnish to Operator all abstracts (including federal lease status reports), title opinions, title papers and curative material in its possession free of charge. All such information not in the possession of or made available to Operator by the parties, but necessary for the examination of the title, shall be obtained by Operator. Operator shall cause title to be examined by attorneys on its staff or by outside attorneys. Copies of all title opinions shall be furnished to each Drilling Party. Costs incurred by Operator in procuring abstracts, fees paid outside attorneys for title examination (including preliminary, supplemental, shut-in royalty opinions and division order title opinions) and other direct charges as provided in Exhibit "C" shall subject to prior approval of the Non-Operator(s) be borne by the Drilling Parties in the proportion that the interest of each Drilling Party bears to the total interest of all Drilling Parties as such interests appear in Exhibit "A". Operator shall make no charge for services rendered by its staff attorneys or other personnel in the performance of the above functions.

Each party shall be responsible for securing curative matter and pooling amendments or agreements required in connection with Leases or Oil and Gas Interests contributed by such party. Operator shall be responsible for the preparation and recording of pooling designations or declarations and communitization agreements as well as the conduct of hearings before governmental agencies for the securing of spacing or pooling orders or any other orders necessary or appropriate to the conduct of operations hereunder. This shall not prevent any party from appearing on its own behalf at such hearings. Costs incurred by Operator, including fees paid to outside attorneys, which are associated with hearings before governmental agencies, and which costs are necessary and proper for the activities contemplated under this agreement, shall be direct charges to the joint account and shall not be covered by the administrative overhead charges as provided in Exhibit "C".

Operator shall make no charge for services rendered by its staff attorneys or other personnel in the performance of the above functions.

No well shall be drilled on the Contract Area until after (1) the title to the Drillsite or Drilling Unit, if appropriate, has been examined as above provided, and (2) the title has been approved by the examining attorney or title has been accepted by all of the Drilling Parties in such well.

B. Loss or Failure of Title:

1. Failure of Title: Should any Oil and Gas Interest or Oil and Gas Lease be lost through failure of title, which results in a reduction of interest from that shown on Exhibit "A", the party credited with contributing the affected Lease or Interest (including, if applicable, a successor in interest to such party) shall have ninety (90) days from final determination of title failure to acquire a new lease or other instrument curing the entirety of the title failure, which acquisition will not be subject to Article VIII.B., and failing to do so, this agreement, nevertheless, shall continue in force as to all remaining Oil and Gas Leases and Interests; and,

(a) The party credited with contributing the Oil and Gas Lease or Interest affected by the title failure (including, if applicable, a successor in interest to such party) shall bear alone the entire loss and it shall not be entitled to recover from Operator or the other parties any development or operating costs which it may have previously paid or incurred, but there shall be no additional liability on its part to the other parties hereto by reason of such title failure;

(b) There shall be no retroactive adjustment of expenses incurred or revenues received from the operation of the Lease or Interest which has failed, but the interests of the parties contained on Exhibit "A" shall be revised on an acreage basis, as of the time it is determined finally that title failure has occurred, so that the interest of the party whose Lease or Interest is affected by the title failure will thereafter be reduced in the Contract Area by the amount of the Lease or Interest failed;

(c) If the proportionate interest of the other parties hereto in any producing well previously drilled on the Contract Area is increased by reason of the title failure, the party who bore the costs incurred in connection with such well attributable to the Lease or Interest which has failed shall receive the proceeds attributable to the increase in such interest (less costs and burdens attributable thereto) until it has been reimbursed for unrecovered costs paid by it in connection with such well attributable to such failed Lease or Interest;

(d) Should any person not a party to this agreement, who is determined to be the owner of any Lease or Interest which has failed, pay in any manner any part of the cost of operation, development, or equipment, such amount shall be paid to the party or parties who bore the costs which are so refunded;

(e) Any liability to account to a person not a party to this agreement for prior production of Oil and Gas which arises by reason of title failure shall be borne severally by each party (including a predecessor to a current party) who received production for which such accounting is required based on the amount of such production received, and each such party shall severally indemnify, defend and hold harmless all other parties hereto for any such liability to account;

(f) No charge shall be made to the joint account for legal expenses, fees or salaries in connection with the defense of the Lease or Interest claimed to have failed, but if the party contributing such Lease or Interest hereto elects to defend its title it shall bear all expenses in connection therewith; and

(g) If any party is given credit on Exhibit "A" to a Lease or Interest which is limited solely to ownership of an interest in the wellbore of any well or wells and the production therefrom, such party's absence of interest in the remainder of the Contract Area shall be considered a Failure of Title as to such remaining Contract Area unless that absence of interest is reflected on Exhibit "A".

2. Loss by Non-Payment or Erroneous Payment of Amount Due: If, through mistake or oversight, any rental, shut-in well payment, minimum royalty or royalty payment, or other payment necessary to maintain all or a portion of an Oil and Gas Lease or interest is not paid or is erroneously paid, and as a result a Lease or Interest terminates, there shall be no monetary liability against the party who failed to make such payment. Unless the party who failed to make the required payment secures a new Lease or Interest covering the same interest within ninety (90) days from the discovery of the failure to make proper payment, which acquisition will not be subject to Article VIII.B., the interests of the parties reflected on Exhibit "A" shall be revised on an acreage basis, effective as of the date of termination of the Lease or Interest involved, and the party who failed to make proper payment will no longer be credited with an interest in the Contract Area on account of ownership of the Lease or Interest which has terminated. If the party who failed to make the required payment shall not have been fully reimbursed, at the time of the loss, from the proceeds of the sale of Oil and Gas attributable to the lost Lease or Interest, calculated on an acreage basis, for the development and operating costs previously paid on account of such Lease or Interest, it shall be reimbursed for unrecovered actual costs previously paid by it (but not for its share of the cost of any dry hole previously drilled or wells previously abandoned) from so much of the following as is necessary to effect reimbursement:

(a) Proceeds of Oil and Gas produced prior to termination of the Lease or Interest, less operating expenses and lease burdens chargeable hereunder to the person who failed to make payment, previously accrued to the credit of the lost Lease or Interest, on an acreage basis, up to the amount of unrecovered costs;

(b) Proceeds of Oil and Gas, less operating expenses and lease burdens chargeable hereunder to the person who failed to make payment,

(c) up to the amount of unrecovered costs attributable to that portion of Oil and Gas thereafter produced and marketed (excluding production from any wells thereafter drilled) which, in the absence of such Lease or Interest termination, would be attributable to the lost Lease or Interest on an acreage basis and which as a result of such Lease or Interest termination is credited to other parties, the proceeds of said portion of the Oil and Gas to be contributed by the other parties in proportion to their respective interests reflected on Exhibit "A"; and,

(d) Any monies, up to the amount of unrecovered costs, that may be paid by any party who is, or becomes, the owner of the Lease or Interest lost, for the privilege of participating in the Contract Area or becoming a party to this agreement.

3. Other Losses: All losses of Leases or Interests committed to this agreement, other than those set forth in Articles IV.B.1. and IV.B.2. above, shall be joint losses and shall be borne by all parties in proportion to their interests shown on Exhibit "A." This shall include

but not be limited to the loss of any Lease or Interest through failure to develop or because express or implied covenants have not been performed (other than performance which requires only the payment of money), and the loss of any Lease by expiration at the end of its primary term if it is not renewed or extended. There shall be no readjustment of interests in the remaining portion of the Contract Area on account of any joint loss.

4. Curing Title: In the event of a Failure of Title under Article IV.B.1. or a loss of title under Article IV.B.2. above, any Lease or Interest acquired by any party hereto (other than the party whose interest has failed or was lost) during the ninety (90) day period provided by Article IV.B.1. and Article IV.B.2. above covering all or a portion of the interest that has failed or was lost shall be offered at cost to the party whose interest has failed or was lost, and the provisions of Article VIII.B. shall not apply to such acquisition.

ARTICLE V OPERATOR

A. Designation and Responsibilities of Operator:

Ponderosa Operating, LLC shall be the Operator of the Contract Area, and shall conduct and direct and have full control of all operations on the Contract Area as permitted and required by, and within the limits of this agreement. In its performance of services hereunder for the Non-Operators, Operator shall be an independent contractor not subject to the control or direction of the Non-Operators except as to the type of operation to be undertaken in accordance with the election procedures contained in this agreement. Operator shall not be deemed, or hold itself out as, the agent of the Non-Operators with authority to bind them to any obligation or liability assumed or incurred by Operator as to any third party. Operator shall conduct its activities under this agreement as a reasonable prudent operator, in a good and workmanlike manner, with due diligence and dispatch, in accordance with good oilfield practice, and in compliance with applicable law and regulation, but in no event shall it have any liability as Operator to the other parties for losses sustained or liabilities incurred except such as may result from gross negligence or willful misconduct.

B. Resignation or Removal of Operator and Selection of Successor:

1. Resignation or Removal of Operator: Operator may resign at any time by giving written notice thereof to Non-Operators. If Operator terminates its legal existence, no longer owns an interest hereunder in the Contract Area, or is no longer capable of serving as Operator, Operator shall be deemed to have resigned without any action by Non-Operators, except the selection of a successor. Operator may be removed only for good cause by the affirmative vote of Non-Operators owning a majority interest based on ownership as shown on Exhibit "A" remaining after excluding the voting interest of Operator; such vote shall not be deemed effective until a written notice has been delivered to the Operator by a Non-Operator detailing the alleged default and Operator has failed to cure the default within thirty (30) days from its receipt of the notice or, if the default concerns an operation then being conducted, within forty-eight (48) hours of its receipt of the notice. For purposes hereof, "good cause" shall mean not only gross negligence or willful misconduct but also the material breach of or inability to meet the standards of operation contained in Article V.A. or material failure or inability to perform its obligations under this agreement.

Subject to Article VII.D.1., such resignation or removal shall not become effective until

7:00 o'clock A.M. on the first day of the calendar month following the expiration of ninety (90) days after the giving of notice of resignation by Operator or action by the Non-Operators to remove Operator, unless a successor Operator has been selected and assumes the duties of Operator at an earlier date. Operator, after effective date of resignation or removal, shall be bound by the terms hereof as a Non-Operator. A change of a corporate name or structure of Operator or transfer of Operator's interest to any single subsidiary, parent or successor corporation shall not be the basis for removal of Operator.

2. Selection of Successor Operator: Upon the resignation or removal of Operator under any provision of this agreement, a successor Operator shall be selected by the parties. The successor Operator shall be selected from the parties owning an interest in the Contract Area at the time such successor Operator is selected. The successor Operator shall be selected by the affirmative vote of two (2) or more parties owning a majority interest based on ownership as shown on Exhibit "A"; provided, however, if an Operator which has been removed or is deemed to have resigned fails to vote or votes only to succeed itself, the successor Operator shall be selected by the affirmative vote of the party or parties owning a majority interest based on ownership as shown on Exhibit "A" remaining after excluding the voting interest of the Operator that was removed or resigned. The former Operator shall promptly deliver to the successor Operator all records and data relating to the operations conducted by the former Operator to the extent such records and data are not already in the possession of the successor operator. Any cost of obtaining or copying the former Operator's records and data shall be charged to the joint account.

3. Effect of Bankruptcy: If Operator becomes insolvent, bankrupt or is placed in receivership, it shall be deemed to have resigned without any action by Non-Operators, except the selection of a successor. If a petition for relief under the federal bankruptcy laws is filed by or against Operator, and the removal of Operator is prevented by the federal bankruptcy court, all Non-Operators and Operator shall comprise an interim operating committee to serve until Operator has elected to reject or assume this agreement pursuant to the Bankruptcy Code, and an election to reject this agreement by Operator as a debtor in possession, or by a trustee in bankruptcy, shall be deemed a resignation as Operator without any action by Non-Operators, except the selection of a successor. During the period of time the operating committee controls operations, all actions shall require the approval of two (2) or more parties owning a majority interest based on ownership as shown on Exhibit "A." In the event there are only two (2) parties to this agreement, during the period of time the operating committee controls operations, a third party acceptable to Operator, Non-Operator and the federal bankruptcy court shall be selected as a member of the operating committee, and all actions shall require the approval of two (2) members of the operating committee without regard for their interest in the Contract Area based on Exhibit "A."

C. Employees and Contractors:

The number of employees or contractors used by Operator in conducting operations hereunder, their selection, and the hours of labor and the compensation for services performed shall be determined Operator, and all such employees or contractors shall be the employees or contractors of Operator.

D. Rights and Duties of Operator:

1. Competitive Rates and Use of Affiliates: All wells drilled on the Contract Area shall be drilled on a competitive contract basis at the usual rates prevailing in the area. If it so desires, Operator may employ its own tools and equipment in the drilling of wells, but its charges therefor shall not exceed the prevailing rates in the area and the rate of such charges shall be agreed upon by the parties in writing before drilling operations are commenced, and such work shall be performed by Operator under the same terms and conditions as are customary and usual in the area in contracts of independent contractors who are doing work of a similar nature. All work performed or materials supplied by affiliates or related parties of Operator shall be performed or supplied at competitive rates, pursuant to written agreement, and in accordance with customs and standards prevailing in the industry.
2. Discharge of Joint Account Obligations: Except as herein otherwise specifically provided, Operator shall promptly pay and discharge expenses incurred in the development and operation of the Contract Area pursuant to this agreement and shall charge each of the parties hereto with their respective proportionate shares upon the expense basis provided in Exhibit "C." Operator shall keep an accurate record of the joint account hereunder, showing expenses incurred and charges and credits made and received.
3. Protection from Liens: Operator shall pay, or cause to be paid, as and when they become due and payable, all accounts of contractors and suppliers and wages and salaries for services rendered or performed, and for materials supplied on, to or in respect of the Contract Area or any operations for the joint account thereof, and shall keep the Contract Area free from liens and encumbrances resulting therefrom except for those resulting from a bona fide dispute as to services rendered or materials supplied.
4. Custody of Funds: Operator shall hold for the account of the Non-Operators any funds of the Non-Operators advanced or paid to the Operator, either for the conduct of operations hereunder or as a result of the sale of production from the Contract Area, and such funds shall remain the funds of the Non-Operators on whose account they are advanced or paid until used for their intended purpose or otherwise delivered to the Non-Operators or applied toward the payment of debts as provided in Article VII.B. Nothing in this paragraph shall be construed to establish a fiduciary relationship between Operator and Non-Operators for any purpose other than to account for Non-Operator funds as herein specifically provided. Nothing in this paragraph shall require the maintenance by Operator of separate accounts for the funds of Non-Operators unless the parties otherwise specifically agree.
5. Access to Contract Area and Records: Operator shall, except as otherwise provided herein, permit each Non-Operator or its duly authorized representative, at the Non-Operator's sole risk and cost, full and free access at all reasonable times to all operations of every kind and character being conducted for the joint account on the Contract Area and to the records of operations conducted thereon or production therefrom, including Operator's books and records relating thereto. Such access rights shall not be exercised in a manner interfering with Operator's conduct of an operation hereunder and shall not obligate Operator to furnish any geologic or geophysical data of an interpretive nature unless the cost of preparation of such interpretive data was charged to the joint account. Operator will furnish to each Non-Operator upon request copies of any and all reports and information obtained by Operator in connection with production and related items, including, without limitation, meter and chart reports, production purchaser statements,

run tickets and monthly gauge reports, but excluding purchase contracts and pricing information to the extent not applicable to the production of the Non-Operator seeking the information. Any audit of Operator's records relating to amounts expended and the appropriateness of such expenditures shall be conducted in accordance with the audit protocol specified in Exhibit "C."

6. Filing and Furnishing Governmental Reports: Operator will file, and upon written request promptly furnish copies to each requesting Non-Operator not in default of its payment obligations, all operational notices, reports or applications required to be filed by local, State, Federal or Indian agencies or authorities having jurisdiction over operations hereunder. Each Non-Operator shall provide to Operator on a timely basis all information necessary to Operator to make such filings.

7. Drilling and Testing Operations: The following provisions shall apply to each well drilled hereunder, including but not limited to the Initial Well:

(a) Operator will promptly advise Non-Operators of the date on which the well is spudded, or the date on which drilling operations are commenced.

(b) Operator will send to Non-Operators such reports, test results and notices regarding the progress of operations on the well as the Non-Operators shall reasonably request, including, but not limited to, daily drilling reports, completion reports, and well logs.

(c) Operator shall adequately test all Zones encountered which may reasonably be expected to be capable of producing Oil and Gas in paying quantities as a result of examination of the electric log or any other logs or cores or tests conducted hereunder.

8. Cost Estimates: Upon request of any Consenting Party, Operator shall furnish estimates of current and cumulative costs incurred for the joint account at reasonable intervals during the conduct of any operation pursuant to this agreement. Operator shall not be held liable for errors in such estimates so long as the estimates are made in good faith.

9. Insurance: At all times while operations are conducted hereunder, Operator shall comply with the workers compensation law of the state where the operations are being conducted; provided, however, that Operator may be a self-insurer for liability under said compensation laws in which event the only charge that shall be made to the joint account shall be as provided in Exhibit "C." Operator shall also carry or provide insurance for the benefit of the joint account of the parties as outlined in Exhibit "D" attached hereto and made a part hereof. Operator shall require all contractors engaged in work on or for the Contract Area to comply with the workers compensation law of the state where the operations are being conducted and to maintain such other insurance as Operator may require.

In the event automobile liability insurance is specified in said Exhibit "D," or subsequently receives the approval of the parties, no direct charge shall be made by Operator for premiums paid for such insurance for Operator's automotive equipment.

ARTICLE VI
DRILLING AND DEVELOPMENT

A. Not Used.

~~On or before the N/A day of N/A, Operator shall commence the drilling of the Initial Well at the following location:~~

~~and shall thereafter continue the drilling of the well with due diligence to~~

~~The drilling of the Initial Well and the participation therein by all parties is obligatory, subject to Article VI.C.1. as to participation in Completion operations and Article VI.F. as to termination of operations and Article XI as to occurrence of force majeure.~~

B. Subsequent Operations:

1. Proposed Operations: If any party hereto should desire to drill any well on the Contract Area ~~other than the Initial Well~~, or if any party should desire to Rework, Sidetrack, Deepen, Recomplete or Plug Back a dry hole or a well no longer capable of producing in paying quantities in which such party has not otherwise relinquished its interest in the proposed objective Zone under this agreement, the party desiring to drill, Rework, Sidetrack, Deepen, Recomplete or Plug Back such a well shall give written notice of the proposed operation to the parties who have not otherwise relinquished their interest in such objective Zone under this agreement and to all other parties in the case of a proposal for Sidetracking or Deepening, specifying the work to be performed, the location, proposed depth, objective Zone and the estimated cost of the operation. The parties to whom such a notice is delivered shall have thirty (30) days after receipt of the notice within which to notify the party proposing to do the work whether they elect to participate in the cost of the proposed operation. If a drilling rig is on location, notice of a proposal to Rework, Sidetrack, Recomplete, Plug Back or Deepen may be given by telephone and the response period shall be limited to forty-eight (48) hours, exclusive of Saturday, Sunday and legal holidays. Failure of a party to whom such notice is delivered to reply within the period above fixed shall constitute an election by that party not to participate in the cost of the proposed operation. Any proposal by a party to conduct an operation conflicting with the operation initially proposed shall be delivered to all parties within the time and in the manner provided in Article VI.B.6.

If all parties to whom such notice is delivered elect to participate in such a proposed operation, the parties shall be contractually committed to participate therein provided such operations are commenced within the time period hereafter set forth, and Operator shall, no later than ninety (90) days after expiration of the notice period of thirty (30) days (or as promptly as practicable after the expiration of the forty-eight (48) hour period when a drilling rig is on location, as the case may be), actually commence the proposed operation and thereafter complete it with due diligence at the risk and expense of the parties participating therein; provided, however, said commencement date may be extended upon written notice of same by Operator to the other parties, for a period of up to thirty (30) additional days if, in the sole opinion of Operator, such additional time is reasonably necessary to obtain permits from

governmental authorities, surface rights (including rights-of-way) or appropriate drilling equipment, or to complete title examination or curative matter required for title approval or acceptance. If the actual operation has not been commenced within the time provided (including any extension thereof as specifically permitted herein or in the force majeure provisions of Article XI) and if any party hereto still desires to conduct said operation, written notice proposing same must be resubmitted to the other parties in accordance herewith as if no prior proposal had been made. Those parties that did not participate in the drilling of a well for which a proposal to Deepen or Sidetrack is made hereunder shall, if such parties desire to participate in the proposed Deepening or Sidetracking operation, reimburse the Drilling Parties in accordance with Article VI.B.4. in the event of a Deepening operation and in accordance with Article VI.B.5. in the event of a Sidetracking operation.

2. Operations by Less Than All Parties:

(a) Determination of Participation. If any party to whom such notice is delivered as provided in Article VI.B.1. or VI.C.1. (Option No. 2) elects not to participate in the proposed operation, then, in order to be entitled to the benefits of this Article, the party or parties giving the notice and such other parties as shall elect to participate in the operation shall, no later than ninety (90) days after the expiration of the notice period of thirty (30) days (or as promptly as practicable after the expiration of the forty-eight (48) hour period when a drilling rig is on location, as the case may be) actually commence the proposed operation and complete it with due diligence. Operator shall perform all work for the account of the Consenting Parties; provided, however, if no drilling rig or other equipment is on location, and if Operator is a Non-Consenting Party, the Consenting Parties shall either:

(i) request Operator to perform the work required by such proposed operation for the account of the Consenting Parties, or (ii) designate one of the Consenting Parties as Operator to perform such work. The rights and duties granted to and imposed upon the Operator under this agreement are granted to and imposed upon the party designated as Operator for an operation in which the original Operator is a Non-Consenting Party. Consenting Parties, when conducting operations on the Contract Area pursuant to this Article VI.B.2., shall comply with all terms and conditions of this agreement.

If less than all parties approve any proposed operation, the proposing party, immediately after the expiration of the applicable notice period, shall advise all Parties of the total interest of the parties approving such operation and its recommendation as to whether the Consenting Parties should proceed with the operation as proposed. Each Consenting Party, within forty-eight (48) hours (exclusive of Saturday, Sunday, and legal holidays) after delivery of such notice, shall advise the proposing party of its desire to (i) limit participation to such party's interest as shown on Exhibit "A" or (ii) carry only its proportionate part (determined by dividing such party's interest in the Contract Area by the interests of all Consenting Parties in the Contract Area) of Non-Consenting Parties' interests, or (iii) carry its proportionate part (determined as provided in (ii)) of Non-Consenting Parties' interests together with all or a portion of its proportionate part of any Non-Consenting Parties' interests that any Consenting Party did not elect to take. Any interest of Non-Consenting Parties that is not carried by a Consenting Party shall be deemed to be carried by the party proposing the operation if such party does not withdraw its proposal. Failure to advise the proposing party within the time required shall be deemed an election under (i). In the event a drilling rig is on location, notice may be given by telephone, and the time permitted for such a response shall not exceed a total of forty-eight (48) hours (exclusive of Saturday,

Sunday and legal holidays). The proposing party, at its election, may withdraw such proposal if there is less than 100% participation and shall notify all parties of such decision within ten (10) days, or within twenty-four (24) hours if a drilling rig is on location, following expiration of the applicable response period. If 100% subscription to the proposed operation is obtained, the proposing party shall promptly notify the Consenting Parties of their proportionate interests in the operation and the party serving as Operator shall commence such operation within the period provided in Article VI.B.1., subject to the same extension right as provided therein.

(b)Relinquishment of Interest for Non-Participation. The entire cost and risk of conducting such operations shall be borne by the Consenting Parties in the proportions they have elected to bear same under the terms of the preceding paragraph. Consenting Parties shall keep the leasehold estates involved in such operations free and clear of all liens and encumbrances of every kind created by or arising from the operations of the Consenting Parties. If such an operation results in a dry hole, then subject to Articles VI.B.6. and VI.E.3., the Consenting Parties shall plug and abandon the well and restore the surface location at their sole cost, risk and expense; provided, however, that those Non-Consenting Parties that participated in the drilling, Deepening or Sidetracking of the well shall remain liable for, and shall pay, their proportionate shares of the cost of plugging and abandoning the well and restoring the surface location insofar only as those costs were not increased by the subsequent operations of the Consenting Parties. If any well drilled, Reworked, Sidetracked, Deepened, Recompleted or Plugged Back under the provisions of this Article results in a well capable of producing Oil and/or Gas in paying quantities, the Consenting Parties shall Complete and equip the well to produce at their sole cost and risk, and the well shall then be turned over to Operator (if the Operator did not conduct the operation) and shall be operated by it at the expense and for the account of the Consenting Parties. Upon commencement of operations for the drilling, Reworking, Sidetracking, Recompleting, Deepening or Plugging Back of any such well by Consenting Parties in accordance with the provisions of this Article, each Non-Consenting Party shall be deemed to have relinquished to Consenting Parties, and the Consenting Parties shall own and be entitled to receive, in proportion to their respective interests, all of such Non-Consenting Party's interest in the well and share of production therefrom or, in the case of a Reworking, Sidetracking, Deepening, Recompleting or Plugging Back, or a Completion pursuant to Article VI.C.1. Option No. 2, all of such Non-Consenting Party's interest in the production obtained from the operation in which the Non-Consenting Party did not elect to participate. Such relinquishment shall be effective until the proceeds of the sale of such share, calculated at the well, or market value thereof if such share is not sold (after deducting applicable ad valorem, production, severance, and excise taxes, royalty, overriding royalty and other interests not excepted by Article III.C. payable out of or measured by the production from such well accruing with respect to such interest until it reverts), shall equal the total of the following:

(i) 100 % of each such Non-Consenting Party's share of the cost of any newly acquired surface equipment beyond the wellhead connections (including but not limited to stock tanks, separators, treaters, pumping equipment and piping), plus 100% of each such Non-Consenting Party's share of the cost of operation of the well commencing with first production and continuing until each such Non-Consenting Party's relinquished interest shall revert to it under other provisions of this Article, it being agreed that each Non-Consenting Party's share

of such costs and equipment will be that interest which would have been chargeable to such Non-Consenting Party had it participated in the well from the beginning of the operations; and

(ii) 100 % of (a) that portion of the costs and expenses of drilling, Reworking, Sidetracking, Deepening, Plugging Back, testing, Completing, and Recompleting, after deducting any cash contributions received under Article VIII.C., and of (b) that portion of the cost of newly acquired equipment in the well (to and including the wellhead connections), which would have been chargeable to such Non-Consenting Party if it had participated therein.

Notwithstanding anything to the contrary in this Article VI.B., if the well does not reach the deepest objective Zone described in the notice proposing the well for reasons other than the encountering of granite or practically impenetrable substance or other condition in the hole rendering further operations impracticable, Operator shall give notice thereof to each Non-Consenting Party who submitted or voted for an alternative proposal under Article VI.B.6. to drill the well to a shallower Zone than the deepest objective Zone proposed in the notice under which the well was drilled, and each such Non-Consenting Party shall have the option to participate in the initial proposed Completion of the well by paying its share of the cost of drilling the well to its actual depth, calculated in the manner provided in Article VI.B.4. (a). If any such Non-Consenting Party does not elect to participate in the first Completion proposed for such well, the relinquishment provisions of this Article VI.B.2. (b) shall apply to such party's interest.

(c) Reworking, Recompleting or Plugging Back. An election not to participate in the drilling, Sidetracking or Deepening of a well shall be deemed an election not to participate in any Reworking or Plugging Back operation proposed in such a well, or portion thereof, to which the initial non-consent election applied that is conducted at any time prior to full recovery by the Consenting Parties of the Non-Consenting Party's recoupment amount. Similarly, an election not to participate in the Completing or Recompleting of a well shall be deemed an election not to participate in any Reworking operation proposed in such a well, or portion thereof, to which the initial non-consent election applied that is conducted at any time prior to full recovery by the Consenting Parties of the Non-Consenting Party's recoupment amount. Any such Reworking, Recompleting or Plugging Back operation conducted during the recoupment period shall be deemed part of the cost of operation of said well and there shall be added to the sums to be recouped by the Consenting Parties 100 % of that portion of the costs of the Reworking, Recompleting or Plugging Back operation which would have been chargeable to such Non-Consenting Party had it participated therein. If such a Reworking, Recompleting or Plugging Back operation is proposed during such recoupment period, the provisions of this Article VI.B. shall be applicable as between said Consenting Parties in said well.

(d) Recoupment Matters. During the period of time Consenting Parties are entitled to receive Non-Consenting Party's share of production, or the proceeds therefrom, Consenting Parties shall be responsible for the payment of all ad valorem, production, severance, excise, gathering and other taxes, and all royalty, overriding royalty and other burdens applicable to Non-Consenting Party's share of production not excepted by Article III.C.

In the case of any Reworking, Sidetracking, Plugging Back, Recompleting or Deepening operation, the Consenting Parties shall be permitted to use, free of cost, all casing, tubing and other equipment in the well, but the ownership of all such equipment shall remain unchanged; and upon abandonment of a well after such Reworking, Sidetracking, Plugging Back, Recompleting

or Deepening, the Consenting Parties shall account for all such equipment to the owners thereof, with each party receiving its proportionate part in kind or in value, less cost of salvage.

Within ninety (90) days after the completion of any operation under this Article, the party conducting the operations for the Consenting Parties shall furnish each Non-Consenting Party with an inventory of the equipment in and connected to the well, and an itemized statement of the cost of drilling, Sidetracking, Deepening, Plugging Back, testing, Completing, Recompleting, and equipping the well for production; or, at its option, the operating party, in lieu of an itemized statement of such costs of operation, may submit a detailed statement of monthly billings. Each month thereafter, during the time the Consenting Parties are being reimbursed as provided above, the party conducting the operations for the Consenting Parties shall furnish the Non-Consenting Parties with an itemized statement of all costs and liabilities incurred in the operation of the well, together with a statement of the quantity of Oil and Gas produced from it and the amount of proceeds realized from the sale of the well's working interest production during the preceding month. In determining the quantity of Oil and Gas produced during any month, Consenting Parties shall use industry accepted methods such as but not limited to metering or periodic well tests. Any amount realized from the sale or other disposition of equipment newly acquired in connection with any such operation which would have been owned by a Non-Consenting Party had it participated therein shall be credited against the total unreturned costs of the work done and of the equipment purchased in determining when the interest of such Non-Consenting Party shall revert to it as above provided; and if there is a credit balance, it shall be paid to such Non-Consenting Party.

If and when the Consenting Parties recover from a Non-Consenting Party's relinquished interest the amounts provided for above, the relinquished interests of such Non-Consenting Party shall automatically revert to it as of 7:00 a.m. on the day following the day on which such recoupment occurs, and, from and after such reversion, such Non-Consenting Party shall own the same interest in such well, the material and equipment in or pertaining thereto, and the production therefrom as such Non-Consenting Party would have been entitled to had it participated in the drilling, Sidetracking, Reworking, Deepening, Recompleting or Plugging Back of said well. Thereafter, such Non-Consenting Party shall be charged with and shall pay its proportionate part of the further costs of the operation of said well in accordance with the terms of this agreement and Exhibit "C" attached hereto.

3. Stand-By Costs: When a well which has been drilled or Deepened has reached its authorized depth and all tests have been completed and the results thereof furnished to the parties, or when operations on the well have been otherwise terminated pursuant to Article VI.F., stand-by costs incurred pending response to a party's notice proposing a Reworking, Sidetracking, Deepening, Recompleting, Plugging Back or Completing operation in such a well (including the period required under Article VI.B.6. to resolve competing proposals) shall be charged and borne as part of the drilling or Deepening operation just completed. Stand-by costs subsequent to all parties responding, or expiration of the response time permitted, whichever first occurs, and prior to agreement as to the participating interests of all Consenting Parties pursuant to the terms of the second grammatical paragraph of Article VI.B.2. (a), shall be charged to and borne as part of the proposed operation, but if the proposal is subsequently withdrawn because of insufficient participation, such stand-by costs shall be allocated between the Consenting Parties in the proportion each Consenting Party's interest as shown on Exhibit "A" bears to the total interest

as shown on Exhibit "A" of all Consenting Parties.

In the event that notice for a Sidetracking operation is given while the drilling rig to be utilized is on location, any party may request and receive up to five (5) additional days after expiration of the forty-eight hour response period specified in Article within which to respond by paying for all stand-by costs and other costs incurred during such extended response period; Operator may require such party to pay the estimated stand-by time in advance as a condition to extending the response period. If more than one party elects to take such additional time to respond to the notice, standby costs shall be allocated between the parties taking additional time to respond on a day-to-day basis in the proportion each electing party's interest as shown on Exhibit "A" bears to the total interest as shown on Exhibit "A" of all the electing parties.

4. Deepening: If less than all parties elect to participate in a drilling, Sidetracking, or Deepening operation proposed pursuant to Article VI.B.1., the interest relinquished by the Non-Consenting Parties to the Consenting Parties under Article shall relate only and be limited to the lesser of (i) the total depth actually drilled or (ii) the objective depth or Zone of which the parties were given notice under Article VI.B.1. ("Initial Objective"). Such well shall not be Deepened beyond the Initial Objective without first complying with this Article to afford the Non-Consenting Parties the opportunity to participate in the Deepening operation.

In the event any Consenting Party desires to drill or Deepen a Non-Consent Well to a depth below the Initial Objective, such party shall give notice thereof, complying with the requirements of Article VI.B.1., to all parties (including Non-Consenting Parties). Thereupon, Articles VI.B.1. and 2. shall apply and all parties receiving such notice shall have the right to participate or not participate in the Deepening of such well pursuant to said Articles VI.B.1. and 2. If a Deepening operation is approved pursuant to such provisions, and if any Non-Consenting Party elects to participate in the Deepening operation, such Non-Consenting party shall pay or make reimbursement (as the case may be) of the following costs and expenses.

(a) If the proposal to Deepen is made prior to the Completion of such well as a well capable of producing in paying quantities, such Non-Consenting Party shall pay (or reimburse Consenting Parties for, as the case may be) that share of costs and expenses incurred in connection with the drilling of said well from the surface to the Initial Objective which Non-Consenting Party would have paid had such Non-Consenting Party agreed to participate therein, plus the Non-Consenting Party's share of the cost of Deepening and of participating in any further operations on the well in accordance with the other provisions of this Agreement; provided, however, all costs for testing and Completion or attempted Completion of the well incurred by Consenting Parties prior to the point of actual operations to Deepen beyond the Initial Objective shall be for the sole account of Consenting Parties.

(b) If the proposal is made for a Non-Consent Well that has been previously Completed as a well capable of producing in paying quantities, but is no longer capable of producing in paying quantities, such Non-Consenting Party shall pay (or reimburse Consenting Parties for, as the case may be) its proportionate share of all costs of drilling, Completing, and equipping said well from the surface to the Initial Objective, calculated in the manner provided in paragraph (a) above, less those costs recouped by the Consenting Parties from the sale of production from the well. The Non-Consenting Party shall also pay its proportionate share of all costs of re-entering said well. The Non-Consenting Parties' proportionate part (based on the percentage

of such well Non-Consenting Party would have owned had it previously participated in such Non-Consent Well) of the costs of salvable materials and equipment remaining in the hole and salvable surface equipment used in connection with such well shall be determined in accordance with Exhibit "C." If the Consenting Parties have recouped the cost of drilling, Completing, and equipping the well at the time such Deepening operation is conducted, then a Non-Consenting Party may participate in the Deepening of the well with no payment for costs incurred prior to re-entering the well for Deepening.

The foregoing shall not imply a right of any Consenting Party to propose any Deepening for a Non-Consent Well prior to the drilling of such well to its Initial Objective without the consent of the other Consenting Parties as provided in Article VI.F.

4. Sidetracking: Any party having the right to participate in a proposed Sidetracking operation that does not own an interest in the affected wellbore at the time of the notice shall, upon electing to participate, tender to the wellbore owners its proportionate share (equal to its interest in the Sidetracking operation) of the value of that portion of the existing wellbore to be utilized as follows:

(a) If the proposal is for Sidetracking an existing dry hole, reimbursement shall be on the basis of the actual costs incurred in the initial drilling of the well down to the depth at which the Sidetracking operation is initiated.

(b) If the proposal is for Sidetracking a well which has previously produced, reimbursement shall be on the basis of such party's proportionate share of drilling and equipping costs incurred in the initial drilling of the well down to the depth at which the Sidetracking operation is conducted, calculated in the manner described in Article VI.B.4 (b) above. Such party's proportionate share of the cost of the well's salvable materials and equipment down to the depth at which the Sidetracking operation is initiated shall be determined in accordance with the provisions of Exhibit "C."

5. Order of Preference of Operations. Except as otherwise specifically provided in this agreement, if any party desires to propose the conduct of an operation that conflicts with a proposal that has been made by a party under this Article VI, such party shall have fifteen (15) days from delivery of the initial proposal, in the case of a proposal to drill a well or to perform an operation on a well where no drilling rig is on location, or twenty-four (24) hours, exclusive of Saturday, Sunday and legal holidays, from delivery of the initial proposal, if a drilling rig is on location for the well on which such operation is to be conducted, to deliver to all parties entitled to participate in the proposed operation such party's alternative proposal, such alternate proposal to contain the same information required to be included in the initial proposal. Each party receiving such proposals shall elect by delivery of notice to Operator within five (5) days after expiration of the proposal period, or within twenty-four (24) hours (exclusive of Saturday, Sunday and legal holidays) if a drilling rig is on location for the well that is the subject of the proposals, to participate in one of the competing proposals. Any party not electing within the time required shall be deemed not to have voted. The proposal receiving the vote of parties owning the largest aggregate percentage interest of the parties voting shall have priority over all other competing proposals; in the case of a tie vote, the initial proposal shall prevail. Operator shall deliver notice of such result to all parties entitled to participate in the operation within five (5) days after expiration of the election period (or within twenty-four (24) hours, exclusive of Saturday, Sunday and legal holidays, if a drilling rig is

on location). Each party shall then have two (2) days (or twenty-four (24) hours if a rig is on location) from receipt of such notice to elect by delivery of notice to Operator to participate in such operation or to relinquish interest in the affected well pursuant to the provisions of Article VI.B.2.; failure by a party to deliver notice within such period shall be deemed an election not to participate in the prevailing proposal.

6. Conformity to Spacing Pattern. Notwithstanding the provisions of this Article VI.B.2., it is agreed that no wells shall be proposed to be drilled to or Completed in or produced from a Zone from which a well located elsewhere on the Contract Area is producing, unless such well conforms to the then-existing well spacing pattern for such Zone.

7. Paying Wells. No party shall conduct any Reworking, Deepening, Plugging Back, Completion, Recompletion, or Sidetracking operation under this agreement with respect to any well then capable of producing in paying quantities except with the consent of all parties that have not relinquished interests in the well at the time of such operation.

C. Completion of Wells; Reworking and Plugging Back:

1. Completion: Without the consent of all parties, no well shall be drilled, Deepened or Sidetracked, except any well drilled, Deepened or Sidetracked pursuant to the provisions of Article VI.B.2. of this agreement. Consent to the drilling, Deepening or Sidetracking shall include:

All necessary expenditures for the drilling, Deepening or Sidetracking, testing, Completing and equipping of the well, including necessary tankage and/or surface facilities.

~~Option No. 2: All necessary expenditures for the drilling, Deepening or Sidetracking and testing of the well. When such well has reached its authorized depth, and all logs, cores and other tests have been completed, and the results thereof furnished to the parties, Operator shall give immediate notice to the Non-Operators having the right to participate in a Completion attempt whether or not Operator recommends attempting to Complete the well, together with Operator's AFE for Completion costs if not previously provided. The parties receiving such notice shall have forty eight (48) hours (exclusive of Saturday, Sunday and legal holidays) in which to elect by delivery of notice to Operator to participate in a recommended Completion attempt or to make a Completion proposal with an accompanying AFE. Operator shall deliver any such Completion proposal, or any Completion proposal conflicting with Operator's proposal, to the other parties entitled to participate in such Completion in accordance with the procedures specified in Article VI.B.6. Election to participate in a Completion attempt shall include consent to all necessary expenditures for the Completing and equipping of such well, including necessary tankage and/or surface facilities but excluding any stimulation operation not contained on the Completion AFE. Failure of any party receiving such notice to reply within the period above fixed shall constitute an election by that party not to participate in the cost of the Completion attempt; provided, that Article VI.B.6. shall control in the case of conflicting Completion proposals. If one or more, but less than all of the parties, elect to attempt a Completion, the provision of Article VI.B.2. hereof (the phrase "Reworking, Sidetracking, Deepening, Recompleting or Plugging Back" as contained in Article VI.B.2. shall be deemed to include "Completing") shall apply to the operations thereafter conducted by less than all parties; provided, however, that Article VI.B.2. shall apply separately to each separate Completion or Recompletion attempt undertaken hereunder, and an election to become a Non-Consenting Party as~~

~~to one Completion or Recompletion attempt shall not prevent a party from becoming a Consenting Party in subsequent Completion or Recompletion attempts regardless whether the Consenting Parties as to earlier Completions or Recompletion have recouped their costs pursuant to Article VI.B.2.; provided further, that any recoupment of costs by a Consenting Party shall be made solely from the production attributable to the Zone in which the Completion attempt is made. Election by a previous Non-Consenting party to participate in a subsequent Completion or Recompletion attempt shall require such party to pay its proportionate share of the cost of salvable materials and equipment installed in the well pursuant to the previous Completion or Recompletion attempt, insofar and only insofar as such materials and equipment benefit the Zone in which such party participates in a Completion attempt.~~

2. Rework, Recomplete or Plug Back: No well shall be Reworked, Recompleted or Plugged Back except a well Reworked, Recompleted, or Plugged Back pursuant to the provisions of Article VI.B.2. of this agreement. Consent to the Reworking, Recompleting or Plugging Back of a well shall include all necessary expenditures in conducting such operations and Completing and equipping of said well, including necessary tankage and/or surface facilities.

D. Other Operations:

Operator shall not undertake any single project reasonably estimated to require an expenditure in excess of Twenty Five Thousand Dollars (USD 25,000) except in connection with the drilling, Sidetracking, Reworking, Deepening, Completing, Recompleting or Plugging Back of a well that has been previously authorized by or pursuant to this agreement; provided, however, that, in case of explosion, fire, flood or other sudden emergency, whether of the same or different nature, Operator may take such steps and incur such expenses as in its opinion are required to deal with the emergency to safeguard life and property but Operator, as promptly as possible, shall report the emergency to the other parties. If Operator prepares an AFE for its own use, Operator shall furnish any Non-Operator so requesting an information copy thereof for any single project costing in excess of five thousand Dollars (\$ 5000). Any party who has not relinquished its interest in a well shall have the right to propose that Operator perform repair work or undertake the installation of artificial lift equipment or ancillary production facilities such as salt water disposal wells or to conduct additional work with respect to a well drilled hereunder or other similar project (but not including the installation of gathering lines or other transportation or marketing facilities, the installation of which shall be governed by separate agreement between the parties) reasonably estimated to require an expenditure in excess of the amount first set forth above in this Article VI.D. (except in connection with an operation required to be proposed under Articles VI.B.1. or VI.C.1. Option No. 2, which shall be governed exclusively by those Articles). Operator shall deliver such proposal to all parties entitled to participate therein. If within thirty (30) days thereof Operator secures the written consent of any party or parties owning at least 76% of the interests of the parties entitled to participate in such operation, each party having the right to participate in such project shall be bound by the terms of such proposal and shall be obligated to pay its proportionate share of the costs of the proposed project as if it had consented to such project pursuant to the terms of the proposal.

E. Abandonment of Wells:

1. Abandonment of Dry Holes: Except for any well drilled or Deepened pursuant to Article VI.B.2., any well which has been drilled or Deepened under the terms of this agreement and is proposed to be completed as a dry hole shall not be plugged and abandoned without the consent of all parties. Should Operator, after diligent effort, be unable to contact any party, or should any party fail to reply within forty-eight (48) hours (exclusive of Saturday, Sunday and legal holidays) after delivery of notice of the proposal to plug and abandon such well, such party shall be deemed to have consented to the proposed abandonment. All such wells shall be plugged and abandoned in accordance with applicable regulations and at the cost, risk and expense of

the parties who participated in the cost of drilling or Deepening such well. Any party who objects to plugging and abandoning such well by notice delivered to Operator within forty-eight (48) hours (exclusive of Saturday, Sunday and legal holidays) after delivery of notice of the proposed plugging shall take over the well as of the end of such forty-eight (48) hour notice period and conduct further operations in search of Oil and/or Gas subject to the provisions of Article VI.B.; failure of such party to provide proof reasonably satisfactory to Operator of its financial capability to conduct such operations or to take over the well within such period or thereafter to conduct operations on such well or plug and abandon such well shall entitle Operator to retain or take possession of the well and plug and abandon the well. The party taking over the well shall indemnify Operator (if Operator is an abandoning party) and the other abandoning parties against liability for any further operations conducted on such well except for the costs of plugging and abandoning the well and restoring the surface, for which the abandoning parties shall remain proportionately liable.

2. Abandonment of Wells That Have Produced: Except for any well in which a Non-Consent operation has been conducted hereunder for which the Consenting Parties have not been fully reimbursed as herein provided, any well which has been completed as a producer shall not be plugged and abandoned without the consent of all parties. If all parties consent to such abandonment, the well shall be plugged and abandoned in accordance with applicable regulations and at the cost, risk and expense of all the parties hereto. Failure of a party to reply within sixty (60) days of delivery of notice of proposed abandonment shall be deemed an election to consent to the proposal. If, within sixty (60) days after delivery of notice of the proposed abandonment of any well, all parties do not agree to the abandonment of such well, those wishing to continue its operation from the Zone then open to production shall be obligated to take over the well as of the expiration of the applicable notice period and shall indemnify Operator (if Operator is an abandoning party) and the other abandoning parties against liability for any further operations on the well conducted by such parties. Failure of such party or parties to provide proof reasonably satisfactory to Operator of their financial capability to conduct such operations or to take over the well within the required period or thereafter to conduct operations on such well shall entitle operator to retain or take possession of such well and plug and abandon the well.

Parties taking over a well as provided herein shall tender to each of the other parties its proportionate share of the value of the well's salvable material and equipment, determined in accordance with the provisions of Exhibit "C," less the estimated cost of salvaging and the estimated cost of plugging and abandoning and restoring the surface; provided, however, that in the event the estimated plugging and abandoning and surface restoration costs and the estimated cost of salvaging are higher than the value of the well's salvable material and equipment, each of the abandoning parties shall tender to the parties continuing operations their proportionate shares of the estimated excess cost. Each abandoning party shall assign to the non-abandoning parties, without warranty, express or implied, as to title or as to quantity, or fitness for use of the equipment and material, all of its interest in the wellbore of the well and related equipment, together with its interest in the Leasehold insofar and only insofar as such Leasehold covers the right to obtain production from that wellbore in the Zone then open to production. If the interest of the abandoning party is or includes an Oil and Gas Interest, such party shall execute and deliver to the non-abandoning party or parties an oil and gas lease,

limited to the wellbore and the Zone then open to production, for a term of one (1) year and so long thereafter as Oil and/or Gas is produced from the Zone covered thereby, such lease to be on the form attached as Exhibit "B." The assignments or leases so limited shall encompass the Drilling Unit upon which the well is located. The payments by, and the assignments or leases to, the assignees shall be in a ratio based upon the relationship of their respective percentage of participation in the Contract Area to the aggregate of the percentages of participation in the Contract Area of all assignees. There shall be no readjustment of interests in the remaining portions of the Contract Area.

Thereafter, abandoning parties shall have no further responsibility, liability, or interest in the operation of or production from the well in the Zone then open other than the royalties retained in any lease made under the terms of this Article. Upon request, Operator shall continue to operate the assigned well for the account of the non-abandoning parties at the rates and charges contemplated by this agreement, plus any additional cost and charges which may arise as the result of the separate ownership of the assigned well. Upon proposed abandonment of the producing Zone assigned or leased, the assignor or lessor shall then have the option to repurchase its prior interest in the well (using the same valuation formula) and participate in further operations therein subject to the provisions hereof.

3. Abandonment of Non-Consent Operations: The provisions of Article VI.E.1. or VI.E.2. above shall be applicable as between Consenting Parties in the event of the proposed abandonment of any well excepted from said Articles; provided, however, no well shall be permanently plugged and abandoned unless and until all parties having the right to conduct further operations therein have been notified of the proposed abandonment and afforded the opportunity to elect to take over the well in accordance with the provisions of this Article VI.E.; and provided further, that Non-Consenting Parties who own an interest in a portion of the well shall pay their proportionate shares of abandonment and surface restoration cost for such well as provided in Article VI.B.2.(b).

F. Termination of Operations:

Upon the commencement of an operation for the drilling, Reworking, Sidetracking, Plugging Back, Deepening, testing, Completion or plugging of a well, including but not limited to the Initial Well, such operation shall not be terminated without consent of parties bearing 50 % of the costs of such operation; provided, however, that in the event granite or other practically impenetrable substance or condition in the hole is encountered which renders further operations impractical, Operator may discontinue operations and give notice of such condition in the manner provided in Article VI.B.1, and the provisions of Article VI.B. or VI.E. shall thereafter apply to such operation, as appropriate.

G. Taking Production in Kind:

~~—Option No. 1: Gas Balancing Agreement Attached~~

~~Each party shall take in kind or separately dispose of its proportionate share of all Oil and Gas produced from the Contract Area, exclusive of production which may be used in development and producing operations and in preparing and treating Oil and Gas for marketing purposes and production unavoidably lost. Any extra expenditure incurred in the taking in kind or separate disposition by any party of its proportionate share of the production shall be borne by such party. Any party taking its share of production in kind shall be required to pay for only its proportionate share of such part of Operator's surface facilities which~~

~~it uses. Each party shall execute such division orders and contracts as may be necessary for the sale of its interest in production from the Contract Area, and, except as provided in Article VII.B., shall be entitled to receive payment directly from the purchaser thereof for its share of all production.~~

~~If any party fails to make the arrangements necessary to take in kind or separately dispose of its proportionate share of the Oil produced from the Contract Area, Operator shall have the right, subject to the revocation at will by the party owning it, but not the obligation, to purchase such Oil or sell it to others at any time and from time to time, for the account of the non taking party. Any such purchase or sale by Operator may be terminated by Operator upon at least ten (10) days written notice to the owner of said production and shall be subject always to the right of the owner of the production upon at least ten (10) days written notice to Operator to exercise at any time its right to take in kind, or separately dispose of, its share of all Oil not previously delivered to a purchaser. Any purchase or sale by Operator of any other party's share of Oil shall be only for such reasonable periods of time as are consistent with the minimum needs of the industry under the particular circumstances, but in no event for a period in excess of one (1) year.~~

~~Any such sale by Operator shall be in a manner commercially reasonable under the circumstances but Operator shall have no duty to share any existing market or to obtain a price equal to that received under any existing market. The sale or delivery by Operator of a non taking party's share of Oil under the terms of any existing contract of Operator shall not give the non taking party any interest in or make the non taking party a party to said contract. No purchase shall be made by Operator without first giving the non taking party at least ten (10) days written notice of such intended purchase and the price to be paid or the pricing basis to be used.~~

~~All parties shall give timely written notice to Operator of their Gas marketing arrangements for the following month, excluding price, and shall notify Operator immediately in the event of a change in such arrangements. Operator shall maintain records of all marketing arrangements, and of volumes actually sold or transported, which records shall be made available to Non Operators upon reasonable request.~~

~~In the event one or more parties' separate disposition of its share of the Gas causes split-stream deliveries to separate pipelines and/or deliveries which on a day to day basis for any reason are not exactly equal to a party's respective proportionate share of total Gas sales to be allocated to it, the balancing or accounting between the parties shall be in accordance with any Gas balancing agreement between the parties hereto, whether such an agreement is attached as Exhibit "E" or is a separate agreement. Operator shall give notice to all parties of the first sales of Gas from any well under this agreement.~~

~~—Option No. 2: No Gas Balancing Agreement:~~

~~Each party shall take in kind or separately dispose of its proportionate share of all Oil and Gas produced from the Contract Area, exclusive of production which may be used in development and producing operations and in preparing and treating Oil and Gas for marketing purposes and production unavoidably lost. Any extra expenditures incurred in the taking in kind or separate disposition by any party of its proportionate share of the production shall be borne by such party. Any party taking its share of production in~~

kind shall be required to pay for only its proportionate share of such part of Operator's surface facilities which it uses.

Each party shall execute such division orders and contracts as may be necessary for the sale of its interest in production from the Contract Area, and, except as provided in Article VII.B., shall be entitled to receive payment directly from the purchaser thereof for its share of all production.

If any party fails to make the arrangements necessary to take in kind or separately dispose of its proportionate share of the Oil and/or Gas produced from the Contract Area, Operator shall have the right, subject to the revocation at will by the party owning it, but not the obligation, to purchase such Oil and/or Gas or sell it to others at any time and from time to time, for the account of the non-taking party. Any such purchase or sale by Operator may be terminated by Operator upon at least ten (10) days written notice to the owner of said production and shall be subject always to the right of the owner of the production upon at least ten (10) days written notice to Operator to exercise its right to take in kind, or separately dispose of, its share of all Oil and/or Gas not previously delivered to a purchaser; provided, however, that the effective date of any such revocation may be deferred at Operator's election for a period not to exceed ninety (90) days if Operator has committed such production to a purchase contract having a term extending beyond such ten (10) -day period. Any purchase or sale by Operator of any other party's share of Oil and/or Gas shall be only for such reasonable periods of time as are consistent with the minimum needs of the industry under the particular circumstances, but in no event for a period in excess of one (1) year.

Any such sale by Operator shall be in a manner commercially reasonable under the circumstances, but Operator shall have no duty to share any existing market or transportation arrangement or to obtain a price or transportation fee equal to that received under any existing market or transportation arrangement. The sale or delivery by Operator of a non-taking party's share of production under the terms of any existing contract of Operator shall not give the non-taking party any interest in or make the non-taking party a party to said contract. No purchase of Oil and Gas and no sale of Gas shall be made by Operator without first giving the non-taking party ten days written notice of such intended purchase or sale and the price to be paid or the pricing basis to be used. Operator shall give notice to all parties of the first sale of Gas from any well under this Agreement.

All parties shall give timely written notice to Operator of their Gas marketing arrangements for the following month, excluding price, and shall notify Operator immediately in the event of a change in such arrangements. Operator shall maintain records of all marketing arrangements, and of volumes actually sold or transported, which records shall be made available to Non-Operators upon reasonable request.

ARTICLE VII
EXPENDITURES AND LIABILITY OF PARTIES

A. Liability Of Parties:

The liability of the parties shall be several, not joint or collective. Each party shall be responsible only for its obligations, and shall be liable only for its proportionate share of the costs of developing and operating the Contract Area. Accordingly, the liens granted among the parties in Article VII.B. are given to secure only the debts of each severally, and no party shall have any liability to third parties hereunder to satisfy the default of any other party in the payment of any expense or obligation hereunder. It is not the intention of the parties to create, nor shall this agreement be construed as creating, a mining or other partnership, joint venture, agency relationship or association, or to render the parties liable as partners, co-venturers, or principals. In their relations with each other under this agreement, the parties shall not be considered fiduciaries or to have established a confidential relationship but rather shall be free to act on an arm's-length basis in accordance with their own respective self-interest, subject, however, to the obligation of the parties to act in good faith in their dealings with each other with respect to activities hereunder.

B. Liens and Security Interests:

Each party grants to the other parties hereto a lien upon any interest it now owns or hereafter acquires in Oil and Gas Leases and Oil and Gas Interests in the Contract Area, and a security interest and/or purchase money security interest in any interest it now owns or hereafter acquires in the personal property and fixtures on or used or obtained for use in connection therewith, to secure performance of all of its obligations under this agreement including but not limited to payment of expense, interest and fees, the proper disbursement of all monies paid hereunder, the assignment or relinquishment of interest in Oil and Gas Leases as required hereunder, and the proper performance of operations hereunder. Such lien and security interest granted by each party hereto shall include such party's leasehold interests, working interests, operating rights, and royalty and overriding royalty interests in the Contract Area now owned or hereafter acquired and in lands pooled or unitized therewith or otherwise becoming subject to this agreement, the Oil and Gas when extracted therefrom and equipment situated thereon or used or obtained for use in connection therewith (including, without limitation, all wells, tools, and tubular goods), and accounts (including, without limitation, accounts arising from gas imbalances or from the sale of Oil and/or Gas at the wellhead), contract rights, inventory and general intangibles relating thereto or arising therefrom, and all proceeds and products of the foregoing.

To perfect the lien and security agreement provided herein, each party hereto shall execute and acknowledge the recording supplement and/or any financing statement prepared and submitted by any party hereto in conjunction herewith or at any time following execution hereof, and Operator is authorized to file this agreement or the recording supplement executed herewith as a lien or mortgage in the applicable real estate records and as a financing statement with the proper officer under the Uniform Commercial Code in the state in which the Contract Area is situated and such other states as Operator shall deem appropriate to perfect the security interest granted hereunder. Any party may file this agreement, the recording supplement executed herewith, or such other documents as it deems necessary as a lien or mortgage in the applicable real estate records and/or a financing statement with the proper officer under the Uniform Commercial Code.

Each party represents and warrants to the other parties hereto that the lien and security interest granted by such party to the other parties shall be a first and prior lien, and each party hereby agrees to maintain the priority of said lien and security interest against all persons acquiring an interest in Oil and Gas Leases and Interests covered by this agreement by, through or under such party. All parties acquiring an interest in Oil and Gas Leases and Oil and Gas Interests covered by this agreement, whether by assignment, merger, mortgage, operation of law, or otherwise, shall be deemed to have taken subject to the lien and security interest granted by this Article VII.B. as to all obligations attributable to such interest hereunder whether or not such obligations arise before or after such interest is acquired.

To the extent that parties have a security interest under the Uniform Commercial Code of the state in which the Contract Area is situated, they shall be entitled to exercise the rights and remedies of a secured party under the Code. The bringing of a suit and the obtaining of judgment by a party for the secured indebtedness shall not be deemed an election of remedies or otherwise affect the lien rights or security interest as security for the payment thereof. In addition, upon default by any party in the payment of its share of expenses, interests or fees, or upon the improper use of funds by the Operator, the other parties shall have the right, without prejudice to other rights or remedies, to collect from the purchaser the proceeds from the sale of such defaulting party's share of Oil and Gas until the amount owed by such party, plus interest as provided in "Exhibit C," has been received, and shall have the right to offset the amount owed against the proceeds from the sale of such defaulting party's share of Oil and Gas. All purchasers of production may rely on a notification of default from the non-defaulting party or parties stating the amount due as a result of the default, and all parties waive any recourse available against purchasers for releasing production proceeds as provided in this paragraph.

If any party fails to pay its share of cost within one hundred twenty (120) days after rendition of a statement therefor by Operator, the non-defaulting parties, including Operator, shall upon request by Operator, pay the unpaid amount in the proportion that the interest of each such party bears to the interest of all such parties. The amount paid by each party so paying its share of the unpaid amount shall be secured by the liens and security rights described in Article VII.B., and each paying party may independently pursue any remedy available hereunder or otherwise.

If any party does not perform all of its obligations hereunder, and the failure to perform subjects such party to foreclosure or execution proceedings pursuant to the provisions of this agreement, to the extent allowed by governing law, the defaulting party waives any available right of redemption from and after the date of judgment, any required valuation or appraisalment of the mortgaged or secured property prior to sale, any available right to stay execution or to require a marshaling of assets and any required bond in the event a receiver is appointed. In addition, to the extent permitted by applicable law, each party hereby grants to the other parties a power of sale as to any property that is subject to the lien and security rights granted hereunder, such power to be exercised in the manner provided by applicable law or otherwise in a commercially reasonable manner and upon reasonable notice.

Each party agrees that the other parties shall be entitled to utilize the provisions of Oil and Gas lien law or other lien law of any state in which the Contract Area is situated to enforce the obligations of each party hereunder. Without limiting the generality of the foregoing, to the extent permitted by applicable law, Non-Operators agree that Operator may invoke or utilize

the mechanics' or materialmen's lien law of the state in which the Contract Area is situated in order to secure the payment to Operator of any sum due hereunder for services performed or materials supplied by Operator.

C. Advances:

Operator, at its election, shall have the right from time to time to demand and receive from one or more of the other parties payment in advance of their respective shares of the estimated amount of the expense to be incurred in operations hereunder during the next succeeding month, which right may be exercised only by submission to each such party of an itemized statement of such estimated expense, together with an invoice for its share thereof. Each such statement and invoice for the payment in advance of estimated expense shall be submitted on or before the 20th day of the next preceding month. Each party shall pay to Operator its proportionate share of such estimate within fifteen (15) days after such estimate and invoice is received. If any party fails to pay its share of said estimate within said time, the amount due shall bear interest as provided in Exhibit "C" until paid. Proper adjustment shall be made monthly between advances and actual expense to the end that each party shall bear and pay its proportionate share of actual expenses incurred, and no more.

D. Defaults and Remedies:

If any party fails to discharge any financial obligation under this agreement, including without limitation the failure to make any advance under the preceding Article VII.C. or any other provision of this agreement, within the period required for such payment hereunder, then in addition to the remedies provided in Article VII.B. or elsewhere in this agreement, the remedies specified below shall be applicable. For purposes of this Article VII.D., all notices and elections shall be delivered only by Operator, except that Operator shall deliver any such notice and election requested by a non-defaulting Non-Operator, and when Operator is the party in default, the applicable notices and elections can be delivered by any Non-Operator. Election of any one or more of the following remedies shall not preclude the subsequent use of any other remedy specified below or otherwise available to a non-defaulting party.

1. Suspension of Rights: Any party may deliver to the party in default a Notice of Default, which shall specify the default, specify the action to be taken to cure the default, and specify that failure to take such action will result in the exercise of one or more of the remedies provided in this Article. If the default is not cured within thirty (30) days of the delivery of such Notice of Default, all of the rights of the defaulting party granted by this agreement may upon notice be suspended until the default is cured, without prejudice to the right of the non-defaulting party or parties to continue to enforce the obligations of the defaulting party previously accrued or thereafter accruing under this agreement. If Operator is the party in default, the Non-Operators shall have in addition the right, by vote of Non-Operators owning a majority in interest in the Contract Area after excluding the voting interest of Operator, to appoint a new Operator effective immediately. The rights of a defaulting party that may be suspended hereunder at the election of the non-defaulting parties shall include, without limitation, the right to receive information as to any operation conducted hereunder during the period of such default, the right to elect to participate in an operation proposed under Article VI.B. of this agreement, the right to participate in an operation being conducted under this agreement even if the party has previously elected to participate in such operation, and the right to receive proceeds of production from any well subject to this agreement.

2. Suit for Damages: Non-defaulting parties or Operator for the benefit of non-defaulting parties may sue (at joint account expense) to collect the amounts in default, plus interest accruing on the amounts recovered from the date of default until the date of collection at the rate specified in Exhibit "C" attached hereto. Nothing herein shall prevent any party from suing any defaulting party to collect consequential damages accruing to such party as a result of the default.

3. Deemed Non-Consent: The non-defaulting party may deliver a written Notice of Non-Consent Election to the defaulting party at any time after the expiration of the thirty-day cure period following delivery of the Notice of Default, in which event if the billing is for the drilling a new well or the Plugging Back, Sidetracking, Reworking or Deepening of a well which is to be or has been plugged as a dry hole, or for the Completion or Recompletion of any well, the defaulting party will be conclusively deemed to have elected not to participate in the operation and to be a Non-Consenting Party with respect thereto under Article VI.B. or VI.C., as the case may be, to the extent of the costs unpaid by such party, notwithstanding any election to participate theretofore made. If election is made to proceed under this provision, then the non-defaulting parties may not elect to sue for the unpaid amount pursuant to Article VII.D.2.

Until the delivery of such Notice of Non-Consent Election to the defaulting party, such party shall have the right to cure its default by paying its unpaid share of costs plus interest at the rate set forth in Exhibit "C," provided, however, such payment shall not prejudice the rights of the non-defaulting parties to pursue remedies for damages incurred by the non-defaulting parties as a result of the default. Any interest relinquished pursuant to this Article VII.D.3. shall be offered to the non-defaulting parties in proportion to their interests, and the non-defaulting parties electing to participate in the ownership of such interest shall be required to contribute their shares of the defaulted amount upon their election to participate therein.

4. Advance Payment: If a default is not cured within thirty (30) days of the delivery of a Notice of Default, Operator, or Non-Operators if Operator is the defaulting party, may thereafter require advance payment from the defaulting party of such defaulting party's anticipated share of any item of expense for which Operator, or Non-Operators, as the case may be, would be entitled to reimbursement under any provision of this agreement, whether or not such expense was the subject of the previous default. Such right includes, but is not limited to, the right to require advance payment for the estimated costs of drilling a well or Completion of a well as to which an election to participate in drilling or Completion has been made. If the defaulting party fails to pay the required advance payment, the non-defaulting parties may pursue any of the remedies provided in the Article VII.D. or any other default remedy provided elsewhere in this agreement. Any excess of funds advanced remaining when the operation is completed and all costs have been paid shall be promptly returned to the advancing party.

5. Costs and Attorneys' Fees: In the event any party is required to bring legal proceedings to enforce any financial obligation of a party hereunder, the prevailing party in such action shall be entitled to recover all court costs, costs of collection, and a reasonable attorney's fee, which the lien provided for herein shall also secure.

E. Rentals, Shut-In Well Payments and Minimum Royalties:

Rentals, shut-in well payments and minimum royalties which may be required under the terms of any lease shall be paid by the party or parties who subjected such lease to this agreement at its or their expense. In the event two or more parties own and have contributed interests in the same lease to this agreement, such parties may designate one of such parties to

make said payments for and on behalf of all such parties. Any party may request, and shall be entitled to receive, proper evidence of all such payments. In the event of failure to make proper payment of any rental, shut-in well payment or minimum royalty through mistake or oversight where such payment is required to continue the lease in force, any loss which results from such non-payment shall be borne in accordance with the provisions of Article IV.B.2.

Operator shall notify Non-Operators of the anticipated completion of a shut-in well, or the shutting in or return to production of a producing well, at least five (5) days (excluding Saturday, Sunday, and legal holidays) prior to taking such action, or at the earliest opportunity permitted by circumstances, but assumes no liability for failure to do so. In the event of failure by Operator to so notify Non-Operators, the loss of any lease contributed hereto by Non-Operators for failure to make timely payments of any shut-in well payment shall be borne jointly by the parties hereto under the provisions of Article IV.B.3.

F. Taxes:

Beginning with the first calendar year after the effective date hereof, Operator shall render for ad valorem taxation all property subject to this agreement which by law should be rendered for such taxes, and it shall pay all such taxes assessed thereon before they become delinquent. Prior to the rendition date, each Non-Operator shall furnish Operator information as to burdens (to include, but not be limited to, royalties, overriding royalties and production payments) on Leases and Oil and Gas Interests contributed by such Non-Operator. If the assessed valuation of any Lease is reduced by reason of its being subject to outstanding excess royalties, overriding royalties or production payments, the reduction in ad valorem taxes resulting therefrom shall inure to the benefit of the owner or owners of such Lease, and Operator shall adjust the charge to such owner or owners so as to reflect the benefit of such reduction. If the ad valorem taxes are based in whole or in part upon separate valuations of each party's working interest, then notwithstanding anything to the contrary herein, charges to the joint account shall be made and paid by the parties hereto in accordance with the tax value generated by each party's working interest. Operator shall bill the other parties for their proportionate shares of all tax payments in the manner provided in Exhibit "C."

If Operator considers any tax assessment improper, Operator may, at its discretion, protest within the time and manner prescribed by law, and prosecute the protest to a final determination, unless all parties agree to abandon the protest prior to final determination. During the pendency of administrative or judicial proceedings, Operator may elect to pay, under protest, all such taxes and any interest and penalty. When any such protested assessment shall have been finally determined, Operator shall pay the tax for the joint account, together with any interest and penalty accrued, and the total cost shall then be assessed against the parties, and be paid by them, as provided in Exhibit "C".

Each party shall pay or cause to be paid all production, severance, excise, gathering and other taxes imposed upon or with respect to the production or handling of such party's share of Oil and Gas produced under the terms of this agreement.

ARTICLE VIII
ACQUISITION, MAINTENANCE OR TRANSFER OF INTEREST

A. Surrender of Leases:

The Leases covered by this agreement, insofar as they embrace acreage in the Contract Area, shall not be surrendered in whole or in part unless all parties consent thereto.

However, should any party desire to surrender its interest in any Lease or in any portion thereof, such party shall give written notice of the proposed surrender to all parties, and the parties to whom such notice is delivered shall have thirty (30) days after delivery of the notice within which to notify the party proposing the surrender whether they elect to consent thereto. Failure of a party to whom such notice is delivered to reply within said 30-day period shall constitute a consent to the surrender of the Leases described in the notice. If all parties do not agree or consent thereto, the party desiring to surrender shall assign, without express or implied warranty of title, all of its interest in such Lease, or portion thereof, and any well, material and equipment which may be located thereon and any rights in production thereafter secured, to the parties not consenting to such surrender. If the interest of the assigning party is or includes an Oil and Gas Interest, the assigning party shall execute and deliver to the party or parties not consenting to such surrender an oil and gas lease covering such Oil and Gas Interest for a term of one (1) year and so long thereafter as Oil and/or Gas is produced from the land covered thereby, such lease to be on the form attached hereto as Exhibit "B." Upon such assignment or lease, the assigning party shall be relieved from all obligations thereafter accruing, but not theretofore accrued, with respect to the interest assigned or leased and the operation of any well attributable thereto, and the assigning party shall have no further interest in the assigned or leased premises and its equipment and production other than the royalties retained in any lease made under the terms of this Article. The party assignee or lessee shall pay to the party assignor or lessor the reasonable salvage value of the latter's interest in any well's salvable materials and equipment attributable to the assigned or leased acreage. The value of all salvable materials and equipment shall be determined in accordance with the provisions of Exhibit "C," less the estimated cost of salvaging and the estimated cost of plugging and abandoning and restoring the surface. If such value is less than such costs, then the party assignor or lessor shall pay to the party assignee or lessee the amount of such deficit. If the assignment or lease is in favor of more than one party, the interest shall be shared by such parties in the proportions that the interest of each bears to the total interest of all such parties. If the interest of the parties to whom the assignment is to be made varies according to depth, then the interest assigned shall similarly reflect such variances.

Any assignment, lease or surrender made under this provision shall not reduce or change the assignor's, lessor's or surrendering party's interest as it was immediately before the assignment, lease or surrender in the balance of the Contract Area; and the acreage assigned, leased or surrendered, and subsequent operations thereon, shall not thereafter be subject to the terms and provisions of this agreement but shall be deemed subject to an Operating Agreement in the form of this agreement.

B. Renewal or Extension of Leases:

If any party secures a renewal or replacement of an Oil and Gas Lease or Interest subject to this agreement, then all other parties shall be notified promptly upon such acquisition or, in the case of a replacement Lease taken before expiration of an existing Lease, promptly upon expiration of the existing Lease. The parties notified shall have the right for a period of thirty (30) days following delivery of such notice in which to elect to participate in the ownership of the renewal or replacement Lease, insofar as such Lease affects lands within the Contract Area, by paying to the party who acquired it their proportionate shares of the acquisition cost allocated to that part of such Lease within the Contract Area, which shall be in proportion to the interest held at that time by the parties in the Contract Area. Each party who participates in the purchase of a renewal or replacement Lease shall be given an assignment of its proportionate interest therein by the acquiring party.

If some, but less than all, of the parties elect to participate in the purchase of a renewal or replacement Lease, it shall be owned by the parties who elect to participate therein, in a ratio based upon the relationship of their respective percentage of participation in the Contract Area to the aggregate of the percentages of participation in the Contract Area of all parties participating in the purchase of such renewal or replacement Lease. The acquisition of a renewal or replacement Lease by any or all of the parties hereto shall not cause a readjustment of the interests of the parties stated in Exhibit "A," but any renewal or replacement Lease in which less than all parties elect to participate shall not be subject to this agreement but shall be deemed subject to a separate Operating Agreement in the form of this agreement.

If the interests of the parties in the Contract Area vary according to depth, then their right to participate proportionately in renewal or replacement Leases and their right to receive an assignment of interest shall also reflect such depth variances.

The provisions of this Article shall apply to renewal or replacement Leases whether they are for the entire interest covered by the expiring Lease or cover only a portion of its area or an interest therein. Any renewal or replacement Lease taken before the expiration of its predecessor Lease, or taken or contracted for or becoming effective within six (6) months after the expiration of the existing Lease, shall be subject to this provision so long as this agreement is in effect at the time of such acquisition or at the time the renewal or replacement Lease becomes effective; but any Lease taken or contracted for more than six (6) months after the expiration of an existing Lease shall not be deemed a renewal or replacement Lease and shall not be subject to the provisions of this agreement.

The provisions in this Article shall also be applicable to extensions of Oil and Gas Leases.

C. Acreage or Cash Contributions:

While this agreement is in force, if any party contracts for a contribution of cash towards the drilling of a well or any other operation on the Contract Area, such contribution shall be paid to the party who conducted the drilling or other operation and shall be applied by it against the cost of

such drilling or other operation. If the contribution be in the form of acreage, the party to whom the contribution is made shall promptly tender an assignment of the acreage, without warranty of title, to the Drilling Parties in the proportions said Drilling Parties shared the cost of drilling the well. Such acreage shall become a separate Contract Area and, to the extent possible, be governed by provisions identical to this agreement. Each party shall promptly notify all other parties of any acreage or cash contributions it may obtain in support of any well or any other operation on the Contract Area. The above provisions shall also be applicable to optional rights to earn acreage outside the Contract Area which are in support of well drilled inside Contract Area.

If any party contracts for any consideration relating to disposition of such party's share of substances produced hereunder, such consideration shall not be deemed a contribution as contemplated in this Article VIII.C.

D. Assignment; Maintenance of Uniform Interest:

For the purpose of maintaining uniformity of ownership in the Contract Area in the Oil and Gas Leases, Oil and Gas Interests, wells, equipment and production covered by this agreement no party shall sell, encumber, transfer or make other disposition of its interest in the Oil and Gas Leases and Oil and Gas Interests embraced within the Contract Area or in wells, equipment and production unless such disposition covers either:

1. the entire interest of the party in all Oil and Gas Leases, Oil and Gas Interests, wells, equipment and production; or
2. an equal undivided percent of the party's present interest in all Oil and Gas Leases, Oil and Gas Interests, wells, equipment and production in the Contract Area.

Every sale, encumbrance, transfer or other disposition made by any party shall be made expressly subject to this agreement and shall be made without prejudice to the right of the other parties, and any transferee of an ownership interest in any Oil and Gas Lease or Interest shall be deemed a party to this agreement as to the interest conveyed from and after the effective date of the transfer of ownership; provided, however, that the other parties shall not be required to recognize any such sale, encumbrance, transfer or other disposition for any purpose hereunder until thirty (30) days after they have received a copy of the instrument of transfer or other satisfactory evidence thereof in writing from the transferor or transferee. No assignment or other disposition of interest by a party shall relieve such party of obligations previously incurred by such party hereunder with respect to the interest transferred, including without limitation the obligation of a party to pay all costs attributable to an operation conducted hereunder in which such party has agreed to participate prior to making such assignment, and the lien and security interest granted by Article VII.B. shall continue to burden the interest transferred to secure payment of any such obligations.

If, at any time the interest of any party is divided among and owned by four or more co-owners, Operator, at its discretion, may require such co-owners to appoint a single trustee or agent with full authority to receive notices, approve expenditures, receive billings for and approve and pay such party's share of the joint expenses, and to deal generally with, and with power to

bind, the co- owners of such party's interest within the scope of the operations embraced in this agreement; however, all such co-owners shall have the right to enter into and execute all contracts or agreements for the disposition of their respective shares of the Oil and Gas produced from the Contract Area and they shall have the right to receive, separately, payment of the sale proceeds thereof.

E. Waiver of Rights to Partitions:

If permitted by the laws of the state or states in which the property covered hereby is located, each party hereto owning an undivided interest in the Contract Area waives any and all rights it may have to partition and have set aside to it in severalty its undivided interest therein.

F. Preferential Right to Purchase:

~~—(Optional; Check if applicable.)~~

Should any party desire to sell all or any part of its interests under this agreement, or its rights and interests in the Contract Area, it shall promptly give written notice to the other parties, with full information concerning its proposed disposition, which shall include the name and address of the prospective transferee (who must be ready, willing and able to purchase), the purchase price, a legal description sufficient to identify the property, and all other terms of the offer. The other parties shall then have an optional prior right, for a period of ten (10) days after the notice is delivered, to purchase for the stated consideration on the same terms and conditions the interest which the other party proposes to sell; and, if this optional right is exercised, the purchasing parties shall share the purchased interest in the proportions that the interest of each bears to the total interest of all purchasing parties. However, there shall be no preferential right to purchase in those cases where any party wishes to mortgage its interests, or to transfer title to its interests to its mortgagee in lieu of or pursuant to foreclosure of a mortgage of its interests, or to dispose of its interests by merger, reorganization, consolidation, or by sale of all or substantially all of its Oil and Gas assets to any party, or by transfer of its interests to a subsidiary or parent company or to a subsidiary of a parent company, or to any company in which such party owns a majority of the stock.

ARTICLE IX
INTERNAL REVENUE CODE ELECTION

If, for federal income tax purposes, this agreement and the operations hereunder are regarded as a partnership, and if the parties have not otherwise agreed to form a tax partnership pursuant to Exhibit "G" or other agreement between them, each party hereby affected elects to be excluded from the application of all of the provisions of Subchapter "K," Chapter 1, Subtitle "A," of the Internal Revenue Code of 1986, as amended ("Code"), as permitted and authorized by Section 761 of the Code and the regulations promulgated thereunder. Operator is authorized and directed to execute on behalf of each party hereby affected such evidence of this election as may be required by the Secretary of the Treasury of the United States or the Federal Internal Revenue Service, including specifically, but not by way of limitation, all of the returns, statements, and the data required by Treasury Regulation §1.761. Should there be any requirement that each party hereby affected give further evidence of this election, each such party shall execute such documents and furnish such other evidence as may be required by the Federal Internal Revenue Service or as may be necessary to evidence this election. No such party shall give any notices or take any other action inconsistent with the election made hereby. If any present or future income tax laws of the state or states in which the Contract Area is located or any future income tax laws of the United States contain provisions similar to those in Subchapter "K," Chapter 1, Subtitle "A," of the Code, under which an election similar to that provided by Section 761 of the Code is permitted, each party hereby affected shall make such election as may be permitted or required by such laws. In making the foregoing election, each such party states that the income derived by such party from operations hereunder can be adequately determined without the computation of partnership taxable income.

ARTICLE X
CLAIMS AND LAWSUITS

Operator may settle any single uninsured third party damage claim or suit arising from operations hereunder if the expenditure does not exceed five thousand Dollars (\$ 5,000) and if the payment is in complete settlement of such claim or suit. If the amount required for settlement exceeds the above amount, the parties hereto shall assume and take over the further handling of the claim or suit, unless such authority is delegated to Operator. All costs and expenses of handling settling, or otherwise discharging such claim or suit shall be the joint expense of the parties participating in the operation from which the claim or suit arises. If a claim is made against any party or if any party is sued on account of any matter arising from operations hereunder over which such individual has no control because of the rights given Operator by this agreement, such party shall immediately notify all other parties, and the claim or suit shall be treated as any other claim or suit involving operations hereunder.

ARTICLE XI
FORCE MAJEURE

If any party is rendered unable, wholly or in part, by force majeure to carry out its obligations under this agreement, other than the obligation to indemnify or make money payments or furnish security, that party shall give to all other parties prompt written notice of the force majeure with reasonably full particulars concerning it; thereupon, the obligations of the party giving the notice, so far as they are affected by the force majeure, shall be suspended during, but no longer than, the continuance of the force majeure. The term "force majeure," as here employed, shall mean an act of God, strike, lockout, or other industrial disturbance, act of the public enemy, war, blockade, public riot, lightening, fire, storm, flood or other act of nature, explosion, governmental action, governmental delay, restraint or inaction, unavailability of equipment, and any other cause, whether of the kind specifically enumerated above or otherwise, which is not reasonably within the control of the party claiming suspension.

The affected party shall use all reasonable diligence to remove the force majeure situation as quickly as practicable. The requirement that any force majeure shall be remedied with all reasonable dispatch shall not require the settlement of strikes, lockouts, or other labor difficulty by the party involved, contrary to its wishes; how all such difficulties shall be handled shall be entirely within the discretion of the party concerned.

ARTICLE XII
NOTICES

All notices authorized or required between the parties by any of the provisions of this agreement, unless otherwise specifically provided, shall be in writing and delivered in person or by United States mail, courier service, telegram, telex, telecopier or any other form of facsimile, postage or charges prepaid, and addressed to such parties at the addresses listed on Exhibit "A." All telephone or oral notices permitted by this agreement shall be confirmed immediately thereafter by written notice. The originating notice given under any provision hereof shall be deemed delivered only when received by the party to whom such notice is directed, and the time for such party to deliver any notice in response thereto shall run from the date the originating notice is received. "Receipt" for purposes of this agreement with respect to written notice delivered hereunder shall be actual delivery of the notice to the address of the party to be notified specified in accordance with this agreement, or to the telecopy, facsimile or telex machine of such party. The second or any responsive notice shall be deemed delivered when deposited in the United States mail or at the office of the courier or telegraph service, or upon transmittal by telex, telecopy or facsimile, or when personally delivered to the party to be notified, provided, that when response is required within 24 or 48 hours, such response shall be given orally or by telephone, telex, telecopy or other facsimile within such period. Each party shall have the right to change its address at any time, and from time to time, by giving written notice thereof to all other parties. If a party is not available to receive notice orally or by telephone when a party attempts to deliver a notice required to be delivered within

24 or 48 hours, the notice may be delivered in writing by any other method specified herein and shall be deemed delivered in the same manner provided above for any responsive notice.

ARTICLE XIII

TERM OF AGREEMENT

This agreement shall remain in full force and effect as to the Oil and Gas Leases and/or Oil and Gas Interests subject hereto for the period of time selected below; provided, however, no party hereto shall ever be construed as having any right, title or interest in or to any Lease or Oil and Gas Interest contributed by any other party beyond the term of this agreement.

So long as any of the Oil and Gas Leases subject to this agreement remain or are continued in force as to any part of the Contract Area, whether by production, extension, renewal or otherwise.

~~Option No. 2: In the event the well described in Article VI.A., or any subsequent well drilled under any provision of this agreement, results in the Completion of a well as a well capable of production of Oil and/or Gas in paying quantities, this agreement shall continue in force so long as any such well is capable of production, and for an additional period of days thereafter; provided, however, if, prior to the expiration of such additional period, one or more of the parties hereto are engaged in drilling, Reworking, Deepening, Sidetracking, Plugging Back, testing or attempting to Complete or Re-complete a well or wells hereunder, this agreement shall continue in force until such operations have been completed and if production results therefrom, this agreement shall continue in force as provided herein. In the event the well described in Article VI.A., or any subsequent well drilled hereunder, results in a dry hole, and no other well is capable of producing Oil and/or Gas from the Contract Area, this agreement shall terminate unless drilling, Deepening, Sidetracking, Completing, Re-completing, Plugging Back or Reworking operations are commenced within days from the date of abandonment of said well. "Abandonment" for such purposes shall mean either~~

~~(i) a decision by all parties not to conduct any further operations on the well or (ii) the elapse of 180 days from the conduct of any operations on the well, whichever first occurs.~~

The termination of this agreement shall not relieve any party hereto from any expense, liability or other obligation or any remedy therefor which has accrued or attached prior to the date of such termination.

Upon termination of this agreement and the satisfaction of all obligations hereunder, in the event a memorandum of this Operating Agreement has been filed of record, Operator is authorized to file of record in all necessary recording offices a notice of termination, and each party hereto agrees to execute such a notice of termination as to Operator's interest, upon request of Operator, if Operator has satisfied all its financial obligations.

ARTICLE XIV
COMPLIANCE WITH LAW AND REGULATION

A. Laws, Regulations and Orders

This agreement shall be subject to the applicable laws of the state in which the Contract Area is located, to the valid rules, regulations, and orders of any duly constituted regulatory body of said state; and to all other applicable federal, state, and local laws, ordinances, rules, regulations and orders.

A. Governing Law:

This agreement and all matters pertaining hereto, including but not limited to matters of performance, non-performance, breach, remedies, procedures, rights, duties, and interpretation or construction, shall be governed and determined by the law of the state in which the Contract Area is located. If the Contract Area is in two or more states, the law of the state of Texas shall govern.

B. Regulatory Agencies:

Nothing herein contained shall grant, or be construed to grant, Operator the right or authority to waive or release any rights, privileges, or obligations which Non-Operators may have under federal or state laws or under rules, regulations or orders promulgated under such laws in reference to oil, gas and mineral operations, including the location, operation, or production of wells, on tracts offsetting or adjacent to the Contract Area.

With respect to the operations hereunder, Non-Operators agree to release Operator from any and all losses, damages, injuries, claims and causes of action arising out of, incident to or resulting directly or indirectly from Operator's interpretation or application of rules, rulings, regulations or orders of the Department of Energy or Federal Energy Regulatory Commission or predecessor or successor agencies to the extent such interpretation or application was made in good faith and does not constitute gross negligence. Each Non-Operator further agrees to reimburse Operator for such Non-Operator's share of production or any refund, fine, levy or other governmental sanction that Operator may be required to pay as a result of such an incorrect interpretation or application, together with interest and penalties thereon owing by Operator as a result of such incorrect interpretation or application.

ARTICLE XV
MISCELLANEOUS

A. Execution:

This agreement shall be binding upon each Non-Operator when this agreement or a counterpart thereof has been executed by such Non-Operator and Operator notwithstanding that this agreement is not then or thereafter executed by all of the parties to which it is tendered or which are listed on Exhibit "A" as owning an interest in the Contract Area or which own, in fact, an interest in the Contract Area. ~~Operator may, however, by written notice to all Non-Operators who have become bound by this agreement as aforesaid, given at any time prior to the actual spud date of the Initial Well but in no event later than five days prior to the date specified in Article VI.A. for commencement of the Initial Well, terminate this agreement if Operator in its sole discretion determines that there is insufficient participation to justify commencement of drilling operations.~~

~~In the event of such a termination by Operator, all further obligations of the parties hereunder shall cease as of such termination. In the event any Non-Operator has advanced or prepaid any share of drilling or other costs hereunder, all sums so advanced shall be returned to such Non-Operator without interest. In the event Operator proceeds with drilling operations for the Initial Well without the execution hereof by all persons listed on Exhibit "A" as having a current working interest in such well, Operator shall indemnify Non-Operators with respect to all costs incurred for the Initial Well which would have been charged to such person under this agreement if such person had executed the same and Operator shall receive all revenues which would have been received by such person under this agreement if such person had executed the same.~~

B. Successor and Assigns:

This agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective heirs, devisees, legal representatives, successors and permitted assigns, and the terms hereof shall be deemed to run with the Leases or Interests included within the Contract Area.

C. Counterparts:

This instrument may be executed in any number of counterparts, each of which shall be considered an original for all purposes.

D. Severability:

For the purposes of assuming or rejecting this agreement as an executory contract pursuant to federal bankruptcy laws, this agreement shall not be severable, but rather must be assumed or rejected in its entirety, and the failure of any party to this agreement to comply with all of its financial obligations provided herein shall be a material default.

ARTICLE XVI
OTHER PROVISIONS

- A. Taipan Resources Inc. shall be deemed to be a Consenting Party in respect of all producing wells/Leases in the Contract Area and all proved non-producing wells/Leases in the Contract Area.
- B. Taipan Resources Inc. shall be deemed to have elected to participate and participated in all operations conducted on the Leases until the date hereof.
- C. Notwithstanding anything contained herein, Taipan Resources Inc. shall be deemed to have participated in all wells from the beginning of the operations on all such wells and shall be deemed to have fully paid its Working Interest share of all expenses in accordance with Exhibit C in timely manner.
- D. Notwithstanding anything contained herein, Parties agree that Ponderosa Operating LLC as operator shall, sell on behalf of Taipan Resources Inc., Taipan Resources Inc.'s share to all Oil and Gas produced on exactly the same terms and subject to the same condition as governing the sale of its own share of Oil and Gas produced from the Contract Area. All Oil and Gas produced for the Contract Area and sold shall be deemed to be sold on behalf of the Parties in proportion of their respective Working Interest as set forth in Exhibit A. Taipan Resources Inc. shall be entitled to the proceeds of sale of all Oil and Gas produced from the Contract Area with effect from the 20th day of May, 2016

- E. Taipan shall be deemed to have borne its proportionate share of cost of developing and operating the Contract Area until the date hereof.

IN WITNESS WHEREOF, this agreement shall be effective as of the 30th day of April, 2016, Ponderosa Operating LLC, who has prepared and circulated this form for execution, represents and warrants that the form was printed from and, with the exception(s) listed below, is identical to the AAPL Form 610-1989 Model Form Operating Agreement, as published in computerized form by Forms On-A-Disk, Inc. No changes, alterations, or modifications, other than those made by strikethrough and/or insertion and that are clearly recognizable as changes in Articles I, II, IV, VI, and XV have been made to the form.

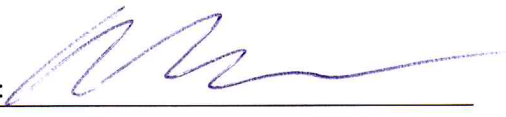
Operator

Ponderosa Operating LLC

Witness

Name: William Poon

By: 

Signature: 

Name: **Richard Sands**

Title: **Managing Member**

Date: May 16, 2016

Tax ID or S.S No: 81-1916493

Non-Operators

Ponderosa Energy LLC


By: 

Name: **Richard Sands**
Title: **Managing Member**
Date: May 16, 2016


Tax ID or S.S No: 81-1876262

Witness

Name: William Poon

Signature: 

Taipan Resources Inc.

By: 

Name: **Joel Dumaresq**
Title: **CEO**
Date: May 16, 2016

Tax ID or S.S No: **N/A**

Witness

Name: Theo van der Linde

Signature: 

Exhibit A

(1) Description of lands subject to this agreement

The Lands subject to this agreement shall constitute all of those within the Certified CREST Engineering report dated April 1, 2016, and may be amended from time to time with consent of all parties.

(2) Restrictions, if any, as to depths, formations, or substances

The parties have no knowledge of any restrictions on the Land or Leases at this time.

Parties to agreement:

(3) Parties to agreement with addresses and telephone numbers for notice purposes

Taipan Resources

Joel Dumaresq
1075 W. Georgia Street, Vancouver,
British Columbia, V6E 3C9, Canada
604-336-3193

Ponderosa Energy, LLC

Richard Sands 15 Valley Drive
Greenwich, CT 06831 212-798-1333

(4) Percentages or fractional interests of parties to this agreement,

Percentage of Interests: Ponderosa Energy, LLC: 75% Taipan Resources: 25%

(5) Oil and Gas Leases and/or Oil and Gas Interests subject to this agreement,

The Oil and Gas Leases subject to this agreement shall constitute all of those within the Certified CREST Engineering report dated April 1, 2016, and may be amended from time to time with consent of all parties.

(6) Burdens on production.

The parties have no knowledge of any burdens on production at this time.

Exhibit C

**ACCOUNTING PROCEDURE
JOINT OPERATIONS**

I. GENERAL PROVISIONS

1. Definitions

"Joint Property" shall mean the real and personal property subject to the agreement to which this Accounting Procedure is attached.

"Joint Operations" shall mean all operations necessary or proper for the development, operation, protection and maintenance of the Joint Property.

"Joint Account" shall mean the account showing the charges paid and credits received in the conduct of the Joint Operations and which are to be shared by the Parties.

"Operator" shall mean the party designated to conduct the Joint Operations.

"Non-Operators" shall mean the Parties to this agreement other than the Operator.

"Parties" shall mean Operator and Non-Operators.

"First Level Supervisors" shall mean those employees whose primary function in Joint Operations is the direct supervision of other employees and/or contract labor directly employed on the Joint Property in a field operating capacity.

"Technical Employees" shall mean those employees having special and specific engineering, geological or other professional skills, and whose primary function in Joint Operations is the handling of specific operating conditions and problems for the benefit of the Joint Property.

"Personal Expenses" shall mean travel and other reasonable reimbursable expenses of Operator's employees.

"Controllable Material" shall mean Material which at the time is so classified in the Material Classification Manual as most recently recommended by the Council of Petroleum Accountants Societies.

2. Statement and Billings

Operator shall bill Non-Operators on or before the last day of each month for their proportionate share of the Joint Account for the preceding month. Such bills will be accompanied by statements which identify the authority for expenditure, lease or facility, and all charges and credits summarized by appropriate classifications of investment and expense except that items of Controllable Material and unusual charges and credits shall be separately identified and fully described in detail.

3. Advances and Payments by Non-Operators

A. Unless otherwise provided for in the agreement, the Operator may require the Non-Operators to advance their share of estimated cash outlay for the succeeding month's operation within fifteen (15) days after receipt of the billing or by the first day of the month for which the advance is required, whichever is later. Operator shall adjust each monthly billing to reflect advances received from the Non-Operators.

B. Each Non-Operator shall pay its proportion of all bills within fifteen (15) days after receipt. If payment is not made within such time, the unpaid balance shall bear interest monthly at the prime rate in effect at The Federal Reserve Bank on the first day of the month in which delinquency occurs plus 1% or the maximum contract rate permitted by the applicable usury laws in the state in which the Joint Property is located, whichever is the lesser, plus attorney's fees, court costs, and other costs in connection with the collection of unpaid amounts?

4. Adjustments

Payment of any such bills shall not prejudice the right of any Non-Operator to protest or question the correctness thereof; provided, however, all bills and statements rendered to Non-Operators by Operator during any calendar year shall conclusively be presumed to be true and correct after twenty-four (24) months following the end of any such calendar year, unless within the said twenty-four (24) month period a Non-Operator takes written exception thereto and makes claim on Operator for adjustment. No adjustment favorable to Operator shall be made unless it is made within the same prescribed period. The provisions of this paragraph shall not prevent adjustments resulting from a physical inventory of Controllable Material as provided for in Section V.

5. Audits

A. A Non-Operator, upon notice in writing to Operator and all other Non-Operators, shall have the right to audit Operator's accounts and records relating to the Joint Account for any calendar year within the twenty-four (24) month period following the end of such calendar year; provided, however, the making of an audit shall not extend the time for the taking of written exception to and the adjustments of accounts as provided for in Paragraph 4 of this Section I. Where there are two or more Non-Operators, the Non-Operators shall make every reasonable effort to conduct a joint audit in a manner which will result in a minimum of inconvenience to the Operator. Operator shall bear no portion of the Non-Operators' audit cost incurred under this paragraph unless agreed to by the Operator. The audits shall not be conducted more than once each year without prior approval of Operator, except upon the resignation or removal of the Operator, and shall be made at the expense of those Non-Operators approving such audit.

B. The Operator shall reply in writing to an audit report within 180 days after receipt of such report.

6. Approval by Non-Operators

Where an approval or other agreement of the Parties or Non-Operators is expressly required under other sections of this Accounting Procedure and if the agreement in which this Accounting Procedure is attached contains no contrary provisions in regard thereto, Operator shall notify all Non-Operators of the Operator's proposal, and the agreement or approval of a majority in interest of the Non-Operators

shall be controlling on all Non-Operators.

II. DIRECT CHARGES

Operator shall charge the Joint Account with the following items:

1. Ecological and Environmental

Costs incurred for the benefit of the Joint Property as a result of governmental or regulatory requirements to satisfy environmental considerations applicable to the Joint Operations. Such costs may include surveys of an ecological or archaeological nature and pollution control procedures as required by applicable laws and regulations.

2. Rentals and Royalties

Lease rentals and royalties paid by Operator for the Joint Operations.

3. Labor

- A. (1) Salaries and wages of Operator's field employees directly employed on the Joint Property in the conduct of Joint Operations.
- (2) Salaries of First Level Supervisors in the field.
- (3) Salaries and wages of Technical Employees directly employed on the Joint Property if such charges are excluded from the overhead rates.
- (4) Salaries and wages of Technical Employees either temporarily or permanently assigned to and directly employed in the operation of the Joint Property if such charges are excluded from the overhead rates.
- B. Operator's cost of holiday, vacation, sickness and disability benefits and other customary allowances paid to employees whose salaries and wages are chargeable to the Joint Account under Paragraph 3A of this Section II. Such costs under this Paragraph 3B may be charged on a "when and as paid basis" or by "percentage assessment" on the amount of salaries and wages chargeable to the Joint Account under Paragraph 3A of this Section II. If percentage assessment is used, the rate shall be based on the Operator's cost experience.
- C. Expenditures or contributions made pursuant to assessments imposed by governmental authority which are applicable to Operator's costs chargeable to the Joint Account under Paragraphs 3A and 3B of this Section II.
- D. Personal Expenses of those employees whose salaries and wages are chargeable to the Joint Account under Paragraph 3A of this Section II.

4. Employee Benefits

Operator's current costs of established plans for employees' group life insurance, hospitalization, pension, retirement, stock purchase, thrift, bonus, and other benefit plans of a like nature, applicable to Operator's labor cost chargeable to the Joint Account under Paragraphs 3A and 3B of this Section II shall be Operator's actual cost not to exceed the percent most recently recommended by the Council of Petroleum Accountants Societies.

5. Material

Material purchased or furnished by Operator for use on the Joint Property as provided under Section IV. Only such Material shall be purchased for or transferred to the Joint Property as may be required for immediate use and is reasonably practical and consistent with efficient and economical operations. The accumulation of surplus stocks shall be avoided.

6. Transportation

Transportation of employees and Material necessary for the Joint Operations but subject to the following limitations:

- A. If Material is moved to the Joint Property from the Operator's warehouse or other properties, no charge shall be made to the Joint Account for a distance greater than the distance from the nearest reliable supply store where like material is normally available or railway receiving point nearest the Joint Property unless agreed to by the Parties.

- B. If surplus Material is moved to Operator's warehouse or other storage point, no charge shall be made to the Joint Account for a distance greater than the distance to the nearest reliable supply store where like material is normally available, or railway receiving point nearest the Joint Property unless agreed to by the Parties. No charge shall be made to the Joint Account for moving Material to other properties belonging to Operator, unless agreed to by the Parties.
- C. In the application of subparagraphs A and B above, the option to equalize or charge actual trucking cost is available when the actual charge is \$400 or less excluding accessorial charges. The \$400 will be adjusted to the amount most recently recommended by the Council of Petroleum Accountants Societies.

7. Services

The cost of contract services, equipment and utilities provided by outside sources, except services excluded by Paragraph 10 of Section II and Paragraph i, ii, and iii, of Section III. The cost of professional consultant services and contract services of technical personnel directly engaged on the Joint Property if such charges are excluded from the overhead rates. The cost of professional consultant services or contract services of technical personnel not directly engaged on the Joint Property shall not be charged to the Joint Account unless previously agreed to by the Parties.

8. Equipment and Facilities Furnished By Operator

- A. Operator shall charge the Joint Account for use of Operator owned equipment and facilities at rates commensurate with costs of ownership and operation. Such rates shall include costs of maintenance, repairs, other operating expense, insurance, taxes, depreciation, and interest on gross investment less accumulated depreciation not to exceed twelve percent (12%) per annum. Such rates shall not exceed average commercial rates currently prevailing in the immediate area of the Joint Property.
- B. In lieu of charges in paragraph 8A above, Operator may elect to use average commercial rates prevailing in the immediate area of the Joint Property less 20%. For automotive equipment, Operator may elect to use rates published by the Petroleum Motor Transport Association.

9. Damages and Losses to Joint Property

All costs or expenses necessary for the repair or replacement of Joint Property made necessary because of damages or losses incurred by fire, flood, storm, theft, accident, or other cause, except those resulting from Operator's gross negligence or willful misconduct. Operator shall furnish Non-Operator written notice of damages or losses incurred as soon as practicable after a report thereof has been received by Operator.

10. Legal Expense

Expense of handling, investigating and settling litigation or claims, discharging of liens, payment of judgements and amounts paid for settlement of claims incurred in or resulting from operations under the agreement or necessary to protect or recover the Joint Property, except that no charge for services of Operator's legal staff or fees or expense of outside attorneys shall be made unless previously agreed to by the Parties. All other legal expense is considered to be covered by the overhead provisions of Section III unless otherwise agreed to by the Parties, except as provided in Section I, Paragraph 3.

11. Taxes

All taxes of every kind and nature assessed or levied upon or in connection with the Joint Property, the operation thereof, or the production therefrom, and which taxes have been paid by the Operator for the benefit of the Parties. If the ad valorem taxes are based in whole or in part upon separate valuations of each party's working interest, then notwithstanding anything to the contrary herein, charges to the Joint Account shall be made and paid by the Parties hereto in accordance with the tax value generated by each party's working interest.

12. Insurance

Net premiums paid for insurance required to be carried for the Joint Operations for the protection of the Parties. In the event Joint Operations are conducted in a state in which Operator may act as self-insurer for Worker's Compensation and/or Employers Liability under the respective state's laws, Operator may, at its election, include the risk under its self-insurance program and in that event, Operator shall include a charge at Operator's cost not to exceed manual rates.

13. Abandonment and Reclamation

Costs incurred for abandonment of the Joint Property, including costs required by governmental or other regulatory authority.

14. Communications

Cost of acquiring, leasing, installing, operating, repairing and maintaining communication systems, including radio and microwave facilities directly serving the Joint Property. In the event communication facilities/systems serving the Joint Property are Operator owned, charges to the Joint Account shall be made as provided in Paragraph 8 of this Section II.

15. Other Expenditures

Any other expenditure not covered or dealt with in the foregoing provisions of this Section II, or in Section III and which is of direct benefit to the Joint Property and is incurred by the Operator in the necessary and proper conduct of the Joint Operations.

III. OVERHEAD

1. Overhead -Drilling and Producing Operations

- i. As compensation for administrative, supervision, office services and warehousing costs, Operator shall charge drilling and producing operations on either:

(x) Fixed Rate Basis, Paragraph IA,
or () Percentage Basis, Paragraph 1B

Unless otherwise agreed to by the Parties, such charge shall be in lieu of costs and expenses of all offices and salaries or wages plus applicable burdens and expenses of all personnel, except those directly chargeable under Paragraph 3A, Section II. The cost and expense of services from outside sources in connection with matters of taxation, traffic, accounting or matters before or involving governmental agencies shall be considered as included in the overhead rates provided for in the above selected Paragraph of this Section III unless such cost and expense are agreed to by the Parties as a direct charge to the Joint Account.

- ii. The salaries, wages and Personal Expenses of Technical Employees and/or the cost of professional consultant services and contract services of technical personnel directly employed on the Joint Property:

() shall be covered by the overhead rates, or
(x) shall not be covered by the overhead rates.

- iii. The salaries, wages and Personal Expenses of Technical Employees and/or costs of professional consultant services and contract services of technical personnel either temporarily or permanently assigned to and directly employed in the operation of the Joint Property:

() shall be covered by the overhead rates, or
(x) shall not be covered by the overhead rates.

A. Overhead – Fixed Rate Basis

- (1) Operator shall charge the Joint Account at the following rates per well per month:

Drilling Well Rate \$ 7,500 (Prorated for
less than a full month)

Producing Well Rate \$ 300

- (2) Application of Overhead - Fixed Rate Basis shall be as follows:

(a) Drilling Well Rate

- (1) Charges for drilling wells shall begin on the date the well is spudded and terminate on the date the drilling rig, completion rig, or other units used in completion of the well is released, whichever is later, except that no charge shall be made during suspension of drilling or completion operations for fifteen (15) or more consecutive calendar days.
- (2) Charges for wells undergoing any type of workover or recompletion for a period of five (5) consecutive work days or more shall be made at the drilling well rate. Such charges shall be applied for the period from date workover operations, with rig or other units used in workover, commence through date of rig or other unit release, except that no charge shall be made during suspension of operations for fifteen (15) or more consecutive calendar days.

(b) Producing Well Rates

- (1) An active well either produced or injected into for any portion of the month shall be considered as a one well charge for the entire month.
 - (2) Each active completion in a multi-completed well in which production is not commingled down hole shall be considered as a one-well charge providing each completion is considered a separate well by the governing regulatory authority.
 - (3) An inactive gas well shut in because of overproduction or failure of purchaser to take the production shall be considered as a one-well charge providing the gas well is directly connected to a permanent sales outlet.
 - (4) A one-well charge shall be made for the month in which plugging and abandonment operations are completed on any well. This one-well charge shall be made whether or not the well has produced except when drilling well rate applies.
 - (5) All other inactive wells (including but not limited to inactive wells covered by unit allowable, lease allowable, transferred allowable, etc.) shall not qualify for an overhead charge.
- (3) The well rates shall be adjusted as of the first day of April each year following the effective date of the agreement to which this Accounting Procedure is attached. The adjustment shall be computed by multiplying the rate currently in use by the percentage increase or decrease in the average weekly earnings of Crude Petroleum and Gas Production Workers for the last calendar year compared to the calendar year preceding as shown by the index of average weekly earnings of Crude Petroleum and Gas Production Workers as published by the United States Department of Labor, Bureau of Labor Statistics, or the equivalent Canadian index as published by Statistics Canada, as applicable. The adjusted rates shall be the rates currently in use, plus or minus the computed adjustment.

B. Overhead -Percentage Basis

- (1) Operator shall charge the Joint Account at the following rates:

(a) Development

N/A Percent (x %) of the cost of development of the Joint Property exclusive of costs provided under Paragraph 10 of Section II and all salvage credits.

(b) Operating

N/A Percent (x %) of the cost of operating the Joint Property exclusive of costs provided under Paragraphs 2 and 10 of Section II, all salvage credits, the value of injected substances purchased for secondary recovery and all taxes and assessments which are levied, assessed and paid upon the mineral interest in and to the Joint Property.

(2) Application of Overhead - Percentage Basis shall be as follows:

For the purpose of determining charges on a percentage basis under Paragraph IB of this Section III, development shall include all costs in connection with drilling, re-drilling, deepening, or any remedial operations on any or all wells involving the use of drilling rig and crew capable of drilling to the producing interval on the Joint Property; also, preliminary expenditures necessary in preparation for drilling and expenditures incurred in abandoning when the well is not completed as a producer, and original cost of construction or installation of fixed assets, the expansion of fixed assets and any other project clearly discernible as a fixed asset, except Major Construction as defined in Paragraph 2 of this Section III. All other costs shall be considered as operating.

2. Overhead - Major Construction

To compensate Operator for overhead costs incurred in the construction and installation of fixed assets, the expansion of fixed assets, and any other project clearly discernible as a fixed asset required for the development and operation of the Joint Property, Operator shall either negotiate a rate prior to the beginning of construction, or shall charge the Joint Account for overhead based on the following rates for any Major Construction project in excess of \$10,000

A. 5 % of first \$100,000 or total cost if less, plus

B. 3 % of costs in excess of \$100,000 but less than \$1,000,000, plus

C. 2 % of costs in excess of \$1,000,000.

Total cost shall mean the gross cost of any one project. For the purpose of this paragraph, the component parts of a single project shall not be treated separately and the cost of drilling and workover wells and artificial lift equipment shall be excluded.

3. Catastrophe Overhead

To compensate Operator for overhead costs incurred in the event of expenditures resulting from a single occurrence due to oil spill, blowout, explosion, fire, storm, hurricane, or other catastrophes as agreed to by the Parties, which are necessary to restore the Joint Property to the equivalent condition that existed prior to the event causing the expenditures, Operator shall either negotiate a rate prior to charging the Joint Account or shall charge the Joint Account for overhead based on the following rates:

A. 5 % of total costs through \$100,000; plus

B. 3 % of total costs in excess of \$100,000 but less than \$1,000,000; plus

C. 2 % of total costs in excess of \$1,000,000.

Expenditures subject to the overheads above will not be reduced by insurance recoveries, and no other overhead provisions of this Section III shall apply.

4. Amendment of Rates

The overhead rates provided for in this Section III may be amended from time to time only by mutual agreement between the Parties hereto if, in practice, the rates are found to be insufficient or excessive.

IV. PRICING OF JOINT ACCOUNT MATERIAL PURCHASES, TRANSFERS AND DISPOSITIONS

Operator is responsible for Joint Account Material and shall make proper and timely charges and credits for all Material movements affecting the Joint Property. Operator shall provide all Material for use on the Joint Property; however, at Operator's option, such Material may be supplied by the Non-Operator. Operator shall make timely disposition of idle and/or surplus Material, such disposal being made either through sale to Operator or Non-Operator, division in kind, or sale to outsiders. Operator may purchase, but shall be under no obligation to purchase, interest of Non-Operators in surplus condition A or B Material. The disposal of surplus Controllable Material not purchased by the Operator shall be agreed to by the Parties.

1. Purchases

Material purchased shall be charged at the price paid by Operator after deduction of all discounts received. In case of Material found to be defective or returned to vendor for any other reasons, credit shall be passed to the Joint Account when adjustment has been received by the Operator.

2. Transfers and Dispositions

Material furnished to the Joint Property and Material transferred from the Joint Property or disposed of by the Operator, unless otherwise agreed to by the Parties, shall be priced on the following basis exclusive of cash discounts:

A. New Material (Condition A)

(1) Tubular Goods Other than Line Pipe

- (a) Tubular goods, sized 4 inches OD and larger except line pipe, shall be priced at Eastern mill published carload base prices effective as of date of movement plus transportation cost using the 80,000 pound carload weight basis to the railway receiving point nearest the Joint Property for which published rail rates for tubular goods exist. If the 80,000 pound rail rate is not offered, the 70,000 pound or 90,000 pound rail rate may be used. Freight charges for tubing will be calculated from Lorain, Ohio and casing from Youngstown, Ohio.
- (b) For grades which are special to one mill only, prices shall be computed at the mill base of that mill plus transportation cost from that mill to the railway receiving point nearest the Joint Property as provided above in Paragraph 2.A.(1)(a). For transportation cost from points other than Eastern mills, the 30,000 pound Oil Field Haulers Association interstate truck rate shall be used.
- (c) Special end finish tubular goods shall be priced at the lowest published out-of-stock price, f.o.b. Houston, Texas, plus transportation cost, using Oil Field Haulers Association interstate 30,000 pound truck rate, to the railway receiving point nearest the Joint Property.
- (d) Macaroni tubing (size less than 4 inch OD) shall be priced at the lowest published out-of-stock prices f.o.b. the supplier plus transportation costs, using the Oil Field Haulers Association interstate truck rate per weight of tubing transferred, to the railway receiving point nearest the Joint Property.

(2) Line Pipe

- (a) Line pipe movements (except size 24 inch OD and larger with walls $\frac{3}{4}$ inch and over) 30,000 pounds or more shall be priced under provisions of tubular goods pricing in Paragraph A. (1) (a) as provided above. Freight charges shall be calculated from Lorain, Ohio.
 - (b) Line pipe movements (except size 24 inch OD and larger with walls $\frac{3}{4}$ inch and over) less than 30,000 pounds shall be priced at Eastern mill published carload base prices effective as of date of shipment, plus 20 percent, plus transportation costs based on freight rates as set forth under provisions of tubular goods pricing in Paragraph A.(1)(a) as provided above. Freight charges shall be calculated from Lorain, Ohio.
 - (c) Line pipe 24 inch OD and over and $\frac{3}{4}$ inch wall and larger shall be priced f.o.b. the point of manufacture at current new published prices plus transportation cost to the railway receiving point nearest the Joint Property.
 - (d) Line pipe, including fabricated line pipe, drive pipe and conduit not listed on published price lists shall be priced at quoted prices plus freight to the railway receiving point nearest the Joint Property or at prices agreed to by the Parties.
- (3) Other Material shall be priced at the current new price, in effect at date of movement, as listed by a reliable supply store nearest the Joint Property, or point of manufacture, plus transportation costs, if applicable, to the railway receiving point nearest the Joint Property.
 - (4) Unused new Material, except tubular goods, moved from the Joint Property shall be priced at the current new price, in effect on date of movement, as listed by a reliable supply store nearest the Joint Property, or point of manufacture, plus transportation costs, if applicable, to the railway receiving point nearest the Joint Property. Unused new tubulars will be priced as provided above in Paragraph 2 A (1) and (2).

B. Good Used Material (Condition B)

Material in sound and serviceable condition and suitable for reuse without reconditioning:

(1) Material moved to the Joint Property

At seventy-five percent (75%) of current new price, as determined by Paragraph A.

(2) Material used on and moved from the Joint Property

- (a) At seventy-five percent (75%) of current new price, as determined by Paragraph A, if Material was originally charged to the Joint Account as new Material or
- (b) At sixty-five percent (65%) of current new price, as determined by Paragraph A, if Material was originally charged to the Joint Account as used Material.

(3) Material not used on and moved from the Joint Property

At seventy-five percent (75%) of current new price as determined by

Paragraph A. The cost of reconditioning, if any, shall be absorbed by the transferring property.

C. Other Used Material

(1) Condition C

Material which is not in sound and serviceable condition and not suitable for its original function until after reconditioning shall be priced at fifty percent (50%) of current new price as determined by Paragraph A. The cost of reconditioning shall be charged to the receiving property, provided Condition C value plus cost of reconditioning

does not exceed Condition B value.

(2) Condition D

Material, excluding junk, no longer suitable for its original purpose, but usable for some other purpose shall be priced on a basis commensurate with its use. Operator may dispose of Condition D Material under procedures normally used by Operator without prior approval of Non-Operators.

- (a) Casing, tubing, or drill pipe used as line pipe shall be priced as Grade A and B seamless line pipe of comparable size and weight. Used casing, tubing or drill pipe utilized as line pipe shall be priced at used line pipe prices.
- (b) Casing, tubing or drill pipe used as higher pressure service lines than standard line pipe, e.g. power oil lines, shall be priced under normal pricing procedures for casing, tubing, or drill pipe. Upset tubular goods shall be priced on a non-upset basis.

(3) Condition E

Junk shall be priced at prevailing prices. Operator may dispose of Condition E Material under procedures normally utilized by Operator without prior approval of Non-Operators.

D. Obsolete Material

Material which is serviceable and usable for its original function but condition and/or value of such Material is not equivalent to that which would justify a price as provided above may be specially priced as agreed to by the Parties. Such price should result in the Joint Account being charged with the value of the service rendered by such Material.

E. Pricing Conditions

- (1) Loading or unloading costs may be charged to the Joint Account at the rate of twenty-five cents (25¢) per hundred weight on all tubular goods movements, in lieu of actual loading or unloading costs sustained at the stocking point. The above rate shall be adjusted as of the first day of April each year following January 1, 1985 by the same percentage increase or decrease used to adjust overhead rates in Section III, Paragraph 1.A(3). Each year, the rate calculated shall be rounded to the nearest cent and shall be the rate in effect until the first day of April next year. Such rate shall be published each year by the Council of Petroleum Accountants Societies.
- (2) Material involving erection costs shall be charged at applicable percentage of the current knocked-down price of new Material.

3. Premium Prices

Whenever Material is not readily obtainable at published or listed prices because of national emergencies, strikes or other unusual causes over which the Operator has no control, the Operator may charge the Joint Account for the required Material at the Operator's actual cost incurred in providing such Material, in making it suitable for use, and in moving it to the Joint Property; provided notice in writing is furnished to Non-Operators of the proposed charge prior to billing Non-Operators for such Material. Each Non-Operator shall have the right, by so electing and notifying Operator within ten days after receiving notice from Operator, to furnish in kind all or part of his share of such Material suitable for use and acceptable to Operator.

4. Warranty of Material Furnished By Operator

Operator does not warrant the Material furnished. In case of defective Material, credit shall not be passed to the Joint Account until adjustment has been received by Operator from the manufacturers or their agents.

V. INVENTORIES

The Operator shall maintain detailed records of Controllable Material.

1. Periodic Inventories, Notice and Representation

At reasonable intervals, inventories shall be taken by Operator of the Joint Account Controllable Material. Written notice of intention to take inventory shall be given by Operator at least thirty (30) days before any inventory is to begin so that Non-Operators may be represented when any inventory is taken. Failure of Non-Operators to be represented at an inventory shall bind Non-Operators to accept the inventory taken by Operator.

2. Reconciliation and Adjustment of Inventories

Adjustments to the Joint Account resulting from the reconciliation of a physical inventory shall be made within six months following the taking of the inventory. Inventory adjustments shall be made by Operator to the Joint Account for overages and shortages, but, Operator shall be held accountable only for shortages due to lack of reasonable diligence.

3. Special Inventories

Special inventories may be taken whenever there is any sale, change of interest, or change of Operator in the Joint Property. It shall be the duty of the party selling to notify all other Parties as quickly as possible after the transfer of interest takes place. In such cases, both the seller and the purchaser shall be governed by such inventory. In cases involving a change of Operator, all Parties shall be governed by such inventory.

4. Expense of Conducting Inventories

- A. The expense of conducting periodic inventories shall not be charged to the Joint Account unless agreed to by the Parties.
- B. The expense of conducting special inventories shall be charged to the Parties requesting such inventories, except inventories required due to change of Operator shall be charged to the Joint Account.



Turning Energy Into Synergy

Material Classification Manual

*(Formerly known as Bulletins 6 and 32,
which were later renamed MFI 28 and 29, respectively)*

MODEL FORM INTERPRETATION

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Material Classification Manual

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This publication has been reviewed by the Petroleum Accountants Societies through representation on the Council of Petroleum Accountants Societies

I. FOREWORD

A. Purpose

The purpose of this publication is to provide a uniform classification of material utilized in joint interest operations which, under the terms of applicable operating agreements, is subject to record and inventory control. The classification of material as controllable or non-controllable has no correlation to the capitalization or expensing of material cost. The classification of material as controllable and non-controllable is to facilitate the preparation of joint interest billings and the reconciliation of joint account material inventories as specified in the operating agreements. However, the classification of material as non-controllable does not eliminate the operator's responsibility for properly accounting for material purchases, transfers, and dispositions. Users should review the applicable JOA, Accounting Procedures and COPAS MFI-38 for information regarding material purchases, transfers, and dispositions. The terms controllable and non-controllable are used in lieu of detailable and non-detailable.

The 1995 and Project Team Accounting Procedures provide for summary billing based on major material classifications. Information concerning the use of summary billing and major material classifications for joint interest billings prepared under the 1995 and Project Team Accounting Procedures can be found in Publication MFI-26 (Classifications for Use in Summary Form Billing).

B. Material Classification

This publication contains three sections including the Foreword as Section I. Section II classifies material as controllable or non-controllable. Section III is a glossary covering Section II. The material listings are generally complete, and items omitted can generally be considered non-controllable. However, when items utilized in joint operations are not listed in this publication, the operator should classify such material as controllable or non-controllable based on the standards and guidelines listed below in "Classification Standards and Guidelines."

C. Classification Standards and Guidelines

Items have been classified as controllable or non-controllable in this publication in accordance with the following standards and guidelines:

1. Original cost of item versus record maintenance cost
2. Salvable value
3. Identity as a complete unit or part of a unit
4. Probability of movement and/or replacement and/or usability
5. Practical or impractical to control
6. Useful life

The guidelines represent the latest practices in the industry and supersede all prior material classification publications. The information contained in this publication will be reviewed and revised periodically.

II. CONTROLLABLE/NON-CONTROLLABLE MATERIAL

ABSORBER, Tower	C	BAND, Tank	N/C
ACCUMULATOR, Vessel	C	BAR, Sinker	N/C
ACTUATOR		BARREL, Core	N/C
Valve (Electric-Pneumatic/Wellhead Type)	C		
Other	N/C	BASE, All	N/C
		Concrete	
ADAPTER, Wellhead	N/C	Engine Sub	
		Extension Pumping Unit	
AERATOR	N/C	Pump (Motor/Engine)	
		Sliding (Motor/Engine)	
AFTERCOOLER	C	Structural Steel/Welded Tubular	
AGITATOR	N/C	BASIN	
		Cooling Towers, Concrete, Steel	N/C
ALARM SYSTEMS	N/C		
		BEACON, Homing, NDB	N/C
AMPLIFIER	N/C		
Audio		BEAM, All	N/C
Voltage		Chain Hoist	
		Crown Block	
ANALYZER, Chromatograph	N/C	Walking	
ANCHORS	N/C	BIT, All	N/C
ANODE	N/C	BLOWER	
		Power-Operated, Except Hand Held	C
ANTENNA, All	N/C	Hand-Operated	N/C
APPLIANCES, All	N/C	BOILER	C
Air Conditioner			
Coffee Maker		BOOT	
Drinking Fountain		Flow/Tank	N/C
Dryer			
Freezer		BOX, Stuffing	N/C
Heater, Hot Water (Residence)			
Ice Machine		BRIDGE	N/C
Oven/Microwave			
Refrigerator			
Stove		BUILDING	
Washer		Enclosed Structures,	
Other		120 sq. ft. and larger	C
		Enclosed Structures	
ARRESTOR	N/C	Under 120 sq. ft.	N/C
Flame		Shed Type, All Sizes	N/C
Lightning			
ATTENUATOR	N/C	BUOY	N/C
Box Type			
Panel Type		CABINET (See FURNITURE)	N/C
BAFFLE	N/C		
Cooling Tower			
Tank			
BALANCE	N/C		

CAISSON		COMPUTER, All	N/C
Steel, Well	C	Personal Computer	
		Flow Measurement	
CAMERA, All	N/C	Master Terminal Unit (MTU)	
		Remote Terminal Unit (RTU)	
CAPACITOR	N/C	Mainframe	
CAR, Tank	N/C	CONDENSER	N/C
CASING		CONDITIONER	N/C
Well	C	Heating/Refrigerant Type Air	
For Line Pipe (See PIPE)	C	Electric/Gas	
Galvanized Sheet Iron	N/C	Water	
		Evaporative, Air	
CASINGHEAD (See HEAD)		CONDUIT, All	N/C
CATCHER		CONNECTOR	
Pig	N/C	Drivable Breech Block	N/C
Sample	N/C		
CATTLEGUARD	N/C	CONTACTOR, Vessel	C
CENTRIFUGE	N/C	CONTROL, All	N/C
CHAIR (See FURNITURE)	N/C	Flow, Multicompletion	
		Auxiliary, for Governor Regulator/Valve	
		(Automatic/Manual as Pilot	
		Positioner/Precisor)	
CHAMBER, Vessel		Pump Off (Pumping Unit)	
Measuring/Automatic Dump	N/C	Separator, Automatic	
CHARGER	N/C	Transit Float	
Battery		CONTROLLER	
Fence		Electric, Motor, Size 5 and Over	C
CHILLER	C	Electric, Motor, Under Size 5	N/C
		Liquid Level (All)	N/C
CHLORINATOR		Shut Off Time Cycle	N/C
Treating (Feeder)	N/C	Temperature	N/C
		Variable Speed Drive (ESP)	C
CHOKE	N/C	CONVERTER, All	N/C
COALESCER	C	Catalytic, Other than Automotive	
		Differential, Temperature, Pressure	
COLLAR	N/C	Electric Phase Power	
		Voltage, AC to DC	
COLUMN		CONVEYOR	
Water Well Column and Shaft	N/C	Power-Operated	N/C
COMPRESSOR		COOLER	
Air, 20 HP Drive and Above	C	Engine, Large Independent Unit	C
Air, Under 20 HP	N/C	Engine, Small Engine	N/C
Air for Air Balance Pumping Unit	N/C	Attachments such as Radiator, etc.	N/C
Gas	C	Ordinarily Purchased as Part of	
		Engine/Compressor Pkg.	
		Water	N/C
		COOLING TOWER	C

COUNTERBALANCE, All Eccentric Power Pumping Unit	N/C	DETECTOR	N/C
		DISPENSER	N/C
COUPLING	N/C	DOCK	N/C
CRANE		DOME	
Power-Operated, 10 Ton and Over	C	Tank	N/C
Power-Operated, Under 10 Ton	N/C		
CROSSARM	N/C	DRUM	
		Vessel	C
CROSS	N/C	DRYER	
		Air/Gas	N/C
CULVERT	N/C	DYNAMOMETER	N/C
CYLINDER, All	N/C	DYNAMOTOR	N/C
Compressor (Gas)		ELBOW	N/C
Engine Power		END	
Gas Lift Intermitter Weight		Fluid, Pump	N/C
Pneumatic Pumping			
Vacuum			
Water Well			
DAMPENER, Pulsation, All	N/C	ENGINE	
		50 HP and Over	C
DEAERATOR		Under 50 HP	N/C
Vessel	C		
Other	N/C	EQUALIZER	N/C
DE-BUTANIZER	C	EXCHANGER	
		Heat, Production Vessel	C
DECK			
Marine Platform (Steel)	C	EXPANDER	C
Other	N/C		
DE-ETHANIZER	C	EXTINGUISHER	
		Fire, Skid Mounted	N/C
		Other	N/C
DEHYDRATOR	C	FAN	N/C
DE-ISOBUTANIZER	C	FEEDER	
		Chemical	N/C
DENSIMETER	N/C	FENDER	
DEMULSIFIER	C	Offshore Platform	N/C
DE-METHANIZER	C	FILTER,	
DE-PENTANIZER	C	Vessel Type 20" OD and Over	C
		Vessel Type less than 20" OD	N/C
DE-PROPANIZER	C	Other	N/C
DERRICK, Well	N/C	FITTING (See ORIFICE)	
DESANDER	N/C	FLANGE	N/C
DESK (See FURNITURE)	N/C	FLARE, All	N/C

II. CONTROLLABLE/NON-CONTROLLABLE MATERIAL (Cont'd)

FLOAT EQUIPMENT, All		HEAD, Other (Non Wellhead), All	N/C
Centralizer, Casing	N/C	Core Bit	
Collar	N/C	Diamond Core Heads	
Shoe	N/C	Injection Power Pump	
FLOW SPLITTER, Vessel Type	C	HEADER, All	N/C
FLUME		Automatic Well Test (Detailed by Components)	
Tank	N/C	Manifold (Detailed by Components)	
FRACTIONATOR	C	HEATER	
FRAME, All	N/C	Shop Made	N/C
Jack		Residence/Shop (Mfg.)	N/C
Pendulum/Stroke Post		Oil, Gas, Water (Direct/Indirect)	C
		Oil Immersion, Electric	N/C
FURNACE		HELIPORT	
Process	C	Steel	N/C
Other	N/C		
FURNITURE, All	N/C	HOIST	
Cabinet		Power-Operated, 10 Ton and Over	C
Chair		Other	N/C
Desk		HOLD-DOWN, All	N/C
Safe		Hydraulic (All Sizes and Types)	
Table		Insert Pump	
GAUGE	N/C	HUB	
GEARBOX		Hanger Clamp, Sub-sea	N/C
Pumping Unit	N/C	INCINERATOR	N/C
GENERATOR		INJECTOR	N/C
Electric, 50 KW and Over	C		
Electric, Under 50 KW	N/C	INTEGRATOR	
Steam Turbo	C	Gas Chart	N/C
Thermoelectric	N/C		
GUARD	N/C	INTERMITTER	
		Gas Lift	N/C
GUIDE		INVERTER	
Sub-sea Guide Base	C	Voltage, DC to AC	N/C
Other	N/C		
HANGER	N/C	JACKET	
HEAD - WELLHEADS		Concrete/Wood	N/C
(Detailed by Components)		Life	N/C
Casinghead, 3000# WP and Over	C	Platform Section	C
Casinghead, Under 3000 WP	N/C	Well, Steel	C
Spool, 3000# WP and Over	C	JOINT	
Spool, Under 3000# WP	N/C	Blast	N/C
Sub-sea control valve	C		
Sub-sea Production Unit Tree (SSPU)	C	KNOCK-OUT	
Sub-sea Exploration Well Head (SSWH)	N/C	Free Water	C
Tubinghead, 3000# WP and Over	C		
Unihead, 3000# WP and Over	C	LACT - (Lease Automatic Custody Transfer)	C

II. CONTROLLABLE/NON-CONTROLLABLE MATERIAL (Cont'd)

LADDER	N/C	PIPE	
		Composition	N/C
LAUNCH AND RECOVERY SYSTEM,		Corrugated Iron (Culvert)	N/C
Survival Capsule	N/C	Drill	N/C
		For Well Casing and Tubing,	
LAUNCHER, Pig	N/C	Size Under 2"	N/C
		Line, Used for Conducting Fluids and	
LINER		Gases: Steel, Aluminum, and	
Pit	N/C	Fiberglass (Size 2" and Over)	C
Pump	N/C	Line, Usable for Conducting Fluids and	
Polished Rod	N/C	Gases: Steel, Aluminum, Fiberglass	
Well Casing, Production (See CASING)	C	(under size 2")	N/C
		Miscellaneous, Used for Structural	
LUBRICATOR	N/C	Purposes (All sizes)	N/C
		Poly (PVC and Plastic), All	N/C
MACHINE			
Metal Working, All	N/C	PLATFORM	
Office, Electric/Electronic	N/C	Marine, Steel	C
Sand Blasting, Power-Operated	N/C	Other	N/C
MANDREL, All	N/C	POLE	
Flow Valve		Telephone, Electrical	N/C
Gas Lift			
MANIFOLD (Sub-sea)	N/C	PRECIPITATOR	C
METER		PROGRAMMER	
Fluid or Gas	N/C	Well Test	N/C
METER RUN, Tube	N/C	PROTECTOR, All	N/C
		Pump Submersible	
MONITOR		Other	
BS&W Automatic	N/C	PROVER, All	N/C
MOTOR		Metering Calibrating Tank	
Econo-Pak, Size 3 and Over	C	Other	
Econo-Pak, Under Size 3	N/C		
Electric, 50 HP and Over Except	C	PUMP	
Submersible		Centrifugal, 3" Size Connections and	
Electric, less than 50 HP	N/C	Over (Inlet and Outlet)	C
Outboard, 50 HP and Over	C	Centrifugal, Under 3" Size Connections	
Outboard, less than 50 HP	N/C	(Inlet and Outlet)	N/C
Submersible	N/C	Chemical Feeder (See FEEDER or	
		INJECTOR)	N/C
MOWER, Lawn	N/C	Diaphragm, Except Vacuum	N/C
		Electric (Service Station Type)	N/C
NIPPLE	N/C	Hydraulic	N/C
		Reciprocating, 1-1/2" Plunger Size	
ORIFICE	N/C	and Over	C
PACKER		Reciprocating, Under 1-1/2"	
Well	N/C	Plunger Size	N/C
PIG	N/C	Rotary, 3" Connections and Over	
		(Inlet and Outlet)	C
PILING	N/C	Rotary, Under 3" Size Connections	
		(Inlet and Outlet)	N/C
PILOT		Subsurface (Rod and Submersible)	N/C
Valve Top Works	N/C	Vacuum	N/C
		Other	N/C

II. CONTROLLABLE/NON-CONTROLLABLE MATERIAL (Cont'd)

RACK		SCRAPER	N/C
Loading Unit, Tank Car, Barge, Truck	N/C	SCREEN	N/C
RADAR, All	N/C	SCRUBBER	
RADIO, Transmitter/Receiver, All	N/C	Fuel Gas	C
RAFT		Non-Fuel Gas (Gas Plant and Other)	C
Life	N/C	Produced Gas	N/C
REABSORBER	C	SEAL SECTION	
REACTOR	C	Submersible Pump	N/C
REACTIVATOR	C	SELECTOR CONTROL	
REBOILER	C	Electric-Operated	N/C
RECLAIMER	C	SEPARATOR	C
RECONCENTRATOR	C	Gas (Bottom Hole)	N/C
RECORDER, All	N/C	SEWAGE TREATMENT SYSTEM	N/C
Pressure		SILENCER	
Temperature		Exhaust	N/C
Other		SKID	N/C
RECTIFIER		SOFTENER	N/C
Cathodic Protection	N/C	SOLAR PANEL	N/C
REDUCER	N/C	SOUNDER	
REFORMER	C	Well Fluid Level	N/C
REGULATOR, All	N/C	SPOOL (See HEAD)	
Temperature		STABILIZER RECEIVER	N/C
Voltage		STAIRWAY	N/C
Other		STAVE	
RIG (DETAILED BY COMPONENTS)		Tank	N/C
Drilling/Workover	C	STEAMER	
ROD, All	N/C	Portable	N/C
Polished		Truck/Trailer Mounted	N/C
Pony		STEPWALK	
Sucker		Steel	N/C
ROTATOR		STILE	
Sucker Rod	N/C	Steel	N/C
SADDLE	N/C	STILL COLUMN	C
SAFE, OFFICE (See FURNITURE)	N/C	STRIPPER	N/C
SCALE, All	N/C	STUFFING BOX	N/C
Weight Truck Loading		SUB	
Other		Tubing (Pup Joint)	N/C
		SUB-SEA EQUIPMENT	
		Sub-sea Control Valve (part of SSPU)	C
		Sub-sea Production Unit Tree (SSPU)	
		C	

Sub-sea Exploration Wellhead (SSWH)

N/C

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II. CONTROLLABLE/NON-CONTROLLABLE MATERIAL (Cont'd)

SWITCH, All	N/C	UNIT	
		Air Starting—Consisting of Air Compressor	
SWITCHBOARD		Prime Mover, and Tank	N/C
Electric (Submersible Pump Control)	C	Automatic Custody Transfer (ACT)	N/C
All Others	N/C	(See LACT)	
		Corrugated Plate Interceptor (CPI)	C
TANK		Dispersed Oil Recovery	C
Air Receiver, 22 Cubic Feet and Over	C	Fog Horn, Power-Operated	N/C
Flash	C	Gas (Sweetening/Amine Pkg)	C
LP Gas, 500 Gal. and Over	C	Glycol	C
LP Gas under 500 Gal.	N/C	Hydraulic Pumping System	C
Surge	N/C	Iron Sponge	C
300 BBL and Over (all)	C	Low Temperature Extractor (LTX)	C
Under 300 BBL	N/C	Paraffin Scraping, Power-Operated	N/C
		Production	C
TEE	N/C	Pumping Well	C
		Regenerator	C
TELEVISION EQUIPMENT, All	N/C	Skimmer	C
Receiver		Stabilizer	C
Recorder, VCR		Vapor Recovery	C
Transmitter		Wash Down	N/C
		Water Purification/Desalination	
TEMPLATE		(Industrial and Marine Type)	C
Sub-sea	N/C	Welder (ARC) Engine Driven	C
		Welder Other than Engine Drivers	N/C
TESTER		Wireline, All	N/C
Portable Well	N/C		
Other	N/C	VALVE	
		Ball, Globe and Plug 8" and Over	C
TOTALIZER	N/C	Butterfly and Check	N/C
		Control/Diaphragm Operated 1440# WP	
TOWER		Size 6" and Over When Purchased as a Unit	C
Cooling	C	Gate, 3,000# WP Size 1-3/4" and Over	C
Fractionating	C	Other	N/C
Metal, Mfg. (Radar, TV, etc.)	N/C	VEHICLE	
TRAILER		All terrain (ATV)	C
House	C	Automobile and Pick-up	C
Truck	N/C	Backhoe	C
		Bulldozer	C
TRANSFORMER		Forklift	C
Electric, 45 KVA and Over	C	Grader	C
Electric, Under 45 KVA	N/C	Snow Plow	C
FACT (for submersible pump)	C	Snowmobile	C
		Swamp Buggy	C
TRANSMITTER, All	N/C	Tractor	C
Governor Level		Truck	C
Flow Recording/Pressure Indicating		Utility Bed For Truck	N/C
TREATER		WALKWAY	N/C
Emulsion	C		
TUBE BUNDLES	N/C	WATERCRAFT	
		Barge	C
TUBING		Boat, 16 ft. and Over	C
Well, Size 2" OD and Over	C	Boat, Less than 16 ft.	N/C
Well, Under Size 2" OD	N/C	Capsule, Survival	C
Tubing (Pup Joint)	N/C	WINCH/WINDLASS	
		Power-Operated, 10 Ton and Over	C
TUBINGHEAD (See HEAD)			
UMBILICAL, SUB-SEA	C		

III. GLOSSARY

ABSORBER, TOWER	A vessel that uses a special absorbent liquid to remove components from the gas or liquid stream
ACCUMULATOR, VESSEL	A vessel or tank that receives and temporarily stores a liquid used in a continuous process in a gas plant
ACTUATOR	Operator part of a safety valve that closes the valve using pressure changes or electricity
ADAPTER, WELLHEAD	Wellhead component used as a crossover between different sizes, pressures, or diameters
AERATOR	An apparatus for injecting air or gas into a liquid
AFTERCOOLER	Heat exchanger or radiator-type equipment used to reduce temperature in the process stream
AGITATOR	A motor-driven paddle or blade used to mix liquids and solids in drilling mud
ALARM SYSTEMS	Devices used to warn operators of abnormal operating conditions
ALL TERRAIN VEHICLE	(ATV) Small, open, motorized buggies and tricycles designed for off-road use
AMPLIFIER	A device used to increase voltage, power, or sound
ANALYZER, CHROMATOGRAPH	An analytical instrument that separates mixtures of substances into identifiable components by allowing the substance to seep through an absorbent, so each compound becomes absorbed in a separate layer
ANCHORS	Any device that secures or fastens equipment In down-hole equipment, the term often refers to the tail pipe. In offshore drilling, floating drilling vessels are often secured over drill sites by large metal anchors like those used on ships.
ANODE	<ol style="list-style-type: none"> 1. The positive terminal of an electrolytic cell that reduces electrolysis to prevent corrosion/erosion 2. The negative terminal of a primary cell or of a storage battery that delivers current 3. A sacrificial element used for structure or pipeline protection from corrosion through a natural electrolysis process
ANTENNA	A device that receives or transmits microwave or radio signals/communication
ARRESTOR	Equipment used to prevent propagation of flame or lighting
ATTENUATOR	A device for reducing the amplitude of an electrical signal without appreciable distortion

BACKHOE	An excavating machine whose bucket is attached to a boom and drawn toward the machine in operation
BAFFLE	A device (i.e., a plate, wall, or screen) to deflect, check, or regulate flow
BALANCE	(Analytical) An instrument used for weighing, consisting of a beam freely supported in the center with equal weights
BAND, TANK	A circular piece of steel used to secure the staves of a bolted steel tank
BAR, SINKER	A heavy weight or bar placed on or near a lightweight wireline tool; the bar provides weight, so the tool will lower properly into the well
BARGE	Any one of many types of flat-decked, shallow-draft vessels usually towed by a boat. A complete drilling rig may be assembled on a drilling barge, which usually is submersible. Drilling equipment and crew quarters are mounted on a superstructure above the water level.
BARREL, CORE	A tubular device, usually 10 to 60 feet long, located at the bottom of the drill pipe in place of a bit and used to cut and remove a sample of the formation
BASE	(Pumping Unit) Metal structure upon which the pumping unit gear box and sampson post are mounted
BASIN	(Cooling Tower) Lower section of a cooling tower that stores water after the cooling process and prior to recirculation
BATTERY	<ol style="list-style-type: none">1. A group of two or more cells connected together to furnish electric current2. An installation of identical or nearly identical pieces of equipment such as a tank battery or a battery of meters
BEACON, HOMING	A radio transmitter emitting signals for guidance
BEAM, CHAIN HOIST	Section of steel I-beam that supports and allows a chain hoist to be moved from one portion of a building to another
BEAM, CROWN BLOCK	An assembly of sheaves mounted on beams at the top of the derrick over which the drilling line is reeled
BEAM, WALKING	The horizontal steel member of a beam pumping unit that has a rocking or reciprocating motion
BEARING	A machine part in which another part, such as a journal or pin, turns or slides
BELT	A flexible band or cord connecting and wrapping around each of two or more pulleys to transmit power or impart motion
BIT	The cutting or boring element used in drilling oil and gas wells; the bit consists of a cutting element and a circulating element

BLOCK	Any assembly of pulleys on a common framework; in mechanics, one or more pulleys or sheaves mounted to rotate on a common axis; the crown block is an assembly of sheaves mounted on beams at the top of the derrick
BLOWER	A device for producing a current of air or gas
BOAT	A vessel propelled through water by oars, paddles, sails, or power
BOILER	A closed-pressure vessel that has a furnace equipped to burn coal, oil, or gas and is used to generate steam from water
BOOM	<ol style="list-style-type: none">1. A long beam supported by a derrick to hoist loads2. A tubular-shaped absorbent material utilized in spill containment
BOOT	A tubular device placed in a vertical position (either inside or outside a larger vessel) through which well fluids are conducted before they enter the larger vessel; aids in the separation of gas from wet oil; also called a flume or conductor pipe
BOX, STUFFING	A device on top of the wellhead that provides the seal around the polished rod to prevent leakage
BRIDGE	A structure carrying a roadway over a depression or obstacle
BUGGY, SWAMP	Vehicle uniquely equipped to navigate low-lying areas used in exploration activities
BUILDING, ENCLOSED	A structure consisting of a roof and walls, making it completely enclosed
BUILDING, SHED	A structure consisting of a roof and one or more walls that is not enclosed
BULLDOZER	A powerful tractor that has a vertical blade at the front end for moving rocks, dirt, and similar materials
BUOY	A floatable marker
BUSHING	<ol style="list-style-type: none">1. A pipe fitting on which the external thread is larger than the internal thread to allow two pipes of different sizes to be connected together2. A removable lining or sleeve inserted or screwed into an opening to limit its size, resist wear or corrosion, or serve as a guide; a spacer, usually of a soft material, used in lieu of a bearing
CAISSON	Protective tubular device for wells drilled in water locations
CAMERA	A device fitted with a lens through which the image of an object is recorded on light-sensitive material
CAPACITATOR	An electrical device that, when wired in the line of an electrical circuit, stores a charge of electricity and returns the charge to the line when certain electrical conditions occur; also called condenser
CAPSULE, SURVIVOR	Emergency vehicle used for evacuating personnel from an offshore platform

III. GLOSSARY (Cont'd)

CAR, TANK	A railroad car used to transport petroleum or petroleum products
CASING, WELL	Steel pipe placed in an oil or gas well as drilling progresses to prevent the wall of the hole from caving in during drilling, to prevent seepage of fluids, and to provide a means of extracting petroleum if the well is productive
CASING, (GALV. SHEET IRON)	Culvert pipe or "Tin Horn" usually used as conductor pipe to protect freshwater sands
CATCHER, PIG	A pipe used to receive or stop the pig after it has made a successful run
CATCHER, SAMPLE	A device for catching gas vapors and/or liquids from a process area or pipeline for compositional analysis
CATTLE GUARD	Pipe or steel fabricated gateway that inhibits crossing by animals
CENTRALIZER, FLOAT (CASING)	A device secured around the casing at regular intervals to center it in the hole.
CENTRIFUGE	A machine that uses centrifugal force to separate substances of varying densities; also called the shake-out or grind-out machine
CHAMBER, VESSEL	A vessel that measures by volume
CHARGER, BATTERY	A device used to restore the electrical current producing effects to a battery
CHLORINATOR	A device for injecting chemicals into a well or process
CHOKE	A device with an orifice installed in a line to restrict and/or control the flow of fluids
CLAMP	A mechanical device used to hold an object immobile; pipeline clamp—strap used for temporary leak repair
COALESCER	Separator-type vessel normally containing filtration equipment capable of removing solids or water/moisture
COLLAR	A coupling device used to join two lengths of pipe
COLLAR, FLOAT	Float valve used when running casing that acts as a stop for cementing plug.
COLUMN, WATER WELL	The portion of a vertical turbine pump through which the shaft operates and fluid is pumped from the reservoir to the surface
COMPRESSOR	A device used to raise the pressure of a compressible substance such as air or gas
COMPUTER, FLOW MEASUREMENT	Computer capable of reading and computing the volume of gas or liquid passing through a specific point

COMPUTER, MASTER TERMINAL UNIT	Electronic equipment package used in supervisory capacity over network of remote units
COMPUTER, MAINFRAME	Multi-user system normally supporting multiple locations with a wide range of computing capacity
COMPUTER, PERSONAL	A computer capable of being operated by one person or in a network mode with other computers
COMPUTER, REMOTE TERMINAL UNIT	Electronic equipment package used to control an individual location connected to a supervisory unit
CONDENSER	Equipment used to change vapor to liquid
CONDITIONER, AIR	Equipment used to lower the temperature and humidity of an enclosure
CONDITIONER, WATER	Equipment used to make water potable
CONDUIT	Pipe used as a protector through which lines, wiring, etc. are run
CONNECTOR, BREACH BLOCK	Drivable quick connections normally used for conductor casing
CONTACTOR	A vessel in which two or more substances are brought into solution to remove contaminants
CONTROL, AUXILIARY, TRANSIT FLOAT, SEPERATOR AUTO	Secondary instruments or control mechanisms used to regulate or control operations of equipment
CONTROL, MULTI- COMPLETION	Surface and downhole equipment used to produce more than one zone
CONTROLLER, ELECTRIC	Electric control panel used for starting, cycling, or varying the speed of an electric motor size rated by the National Electrical Manufacturers Association (NEMA).
CONTROLLER, LIQUID LEVEL	A device that measures the fluid in a vessel and regulates the flow process
CONTROLLER, TEMPERATURE	A device that uses temperature to regulate equipment operations
CONTROLLER,	

III. GLOSSARY (Cont'd)

TIME CYCLE	A device that shuts down or starts an operation after a set time period
CONVERTER	An instrument that converts one source of power to another, i.e., direct current to alternating current
CONVEYOR	A conveyance consisting of rollers or belts to move materials
COOLER, ENGINE	Process equipment or radiator-type equipment used to cool a liquid product or equipment
COOLER, WATER	Non-vessel-type equipment normally used to cool drinking water
COUNTERBALANCE	A weight that offsets a weight or pulling effect (counterbalance effect)
COUPLING	A device to connect two items (e.g., motor to pump, two pieces of pipe, sucker rods)
CRANE	A machine with a swing arm used for lifting and moving heavy objects
CRANK	A device or part of equipment that transmits rotary motion to turn other parts of the equipment
CROSSARM	The cross section mounted on an electrical pole to support the wires
CROSS	A pipe connection or an upper portion of a wellhead with four (4) openings
CULVERT	A drain running under a road or embankment
CYLINDER	A chamber in a compressor, engine, or pump from which the piston expels fluids, gas, or air
DAMPENER	A device used to reduce surge (e.g., a chamber containing a pressurized bladder used to reduce liquid surge from a pump)
DEAERATOR	An item of equipment used for removing air or other non-condensable gases from a process stream or stream condensate and boiler feed water
DE-BUTANIZER	Tower-type fractionating vessel with an overhead product of butane
DECK	Upper sections of platform above the water line on which equipment is placed
DE-ETHANIZER	A tower-type fractionating vessel with an overhead product of ethane
DEHYDRATOR	"Dehydration unit" utilizing glycol in a process to remove water vapor from natural gas
DE-METHANIZER	Tower-type fractionating vessel with an overhead product of methane
DEMULSIFIER	Vessel used to separate emulsion from a product
DERRICK, WELL	A large load-bearing structure, usually of bolted construction
DE-PENTANIZER	Tower-type fractionating vessel; the overhead product is pentane

DE-PROPANIZER	Tower-type fractionating vessel; the overhead product is propane
DESANDER	A centrifugal device used to remove abrasive materials from fluids
DETECTOR	A device used to discover materials/substances
DISPENSER	A device used to place fluids into a system for treatment
DOCK	Loading platform
DOME, TANK	A tank with a dome-shaped roof affixed to the shell
DRYER, AIR/GAS	Removes water/condensation from air/gas lines
DYNAMOMETER	A device that indicates a variation in load on the polished rod as the rod string reciprocates
DYNAMOTOR	A special form of motor generator combining the motor and generator in a single machine
ELBOW	A fitting used to change the direction of a line
END, FLUID	The portion of a fluid pump that contains the parts involved in moving the fluid
ENGINE	An internal combustion power source
EQUALIZER	A device for equalizing pressure or strain
EXCHANGER, HEAT	A piece of equipment that exchanges temperature between fluids/gases running through tubes (normally in one unit/vessel)
EXTINGUISHER	A canister or system of canisters under pressure containing chemicals designed to put out fire
FAN	A device for producing a current of air; consists of a series of blades or vanes radiating from a hub rotated on its axle by a motor
FASTENER	A device for affixing one object to another
FEEDER, CHEMICAL	See "Injector"
FENDER	Shock absorber or buffer to protect boats from damaging docks or platforms
FILTER, VESSEL TYPE	A vessel containing a porous or mass element through which gas or liquid is passed to separate foreign matter
FITTING	Items used to make up a system of piping (e.g., small pipe, nipples, elbows, tees, unions, and swages)
FLANGE	A projecting rim or edge usually drilled with holes to allow bolting to other flanged fittings

FLARE	A device or system for burning unwanted gas
FLOAT	Ballast to determine the level of fluid controlled by the level-control assembly
FLOW SPLITTER	Removes free water while dividing singular/commingled production flows
FLUME, TANK	See "Boot"
FRACTIONATOR	Tower used to separate single fractions from a mixture of hydrocarbon fluids usually by distillation
FRAME	An upright structure made of metal for supporting the walking beam on a pumping unit
FURNACE, PROCESS	Provides heat for processing liquids/gases (complete unit)
FREE WATER KNOCKOUT	(FWKO) Free water knockout vessel used to separate water from oil
GATE	<ol style="list-style-type: none">1. An opening in a fence to secure entrance into an area2. A movable, closing apparatus of valve
GUAGE	An instrument for measuring or testing volumes, pressures, sizes, or quantities
GEARBOX	The enclosure or case containing a gear train or assembly of reduction gears on a pumping unit
GENERATOR	A machine by which mechanical energy is changed to electrical energy
GLAND	A device used to form a seal around a reciprocating or rotating rod to prevent fluid or vapor leakage
GUARD	A protective shield placed around moving parts of machinery to lessen or prevent the chance of injury to personnel
GUIDE	A structure lowered to the ocean floor prior to offshore drilling used to guide and anchor drilling tools and wellhead housings
HANGER	A device used for hanging or suspending tubing or casing in a well; a system for suspending casing on sub-sea well completions
HEAD, CASING	The lower-most portion of a wellhead assembly attached to the surface casing to seal off and hand the next casing string; also called a starting-head
HEAD, CORE BIT	The bit attached to the bottom of a core barrel used to obtain formation samples
HEAD, INJECTION	Uppermost control on a water injection well

HEAD, POWER PUMP	Main cover for internal parts of power pump
HEAD, SPOOL	A casinghead located between the starting-head and tubing-head used for hanging additional strings of casing
HEAD, SUB-SEA EXPL. WELL	Equipment used on the seabed for the start of drilling operations, including 30" wellhead housing, 18-3/4" wellhead housing, 16" landing sub and 16" casing hanger assembly
HEAD, TUBING	The uppermost portion of a wellhead assembly which suspends and seals off the production tubing string and provides a connection for the Christmas tree
HEAD, UNI-	A casing-head unit capable of hanging multiple casing strings
HEAD, WELL	The equipment used to maintain surface control of a well, including the casing-head, spools, tubing-head, and Christmas tree
HEADER, AUTO WELL TEST	Device at header to automatically test selective wells
HEADER, MANIFOLD	Gathering point where lines from multiple wells merge to one line
HEATER	Vessel for heating fluids for processing
HELIPORT	A landing and take-off place for a helicopter
HOIST	A device used to aid in lifting (manual or power-operated)
HOLD-DOWN, HYDRAULIC	A device used to anchor and pack-off a pump in wells where a pump seating nipple has not been provided
HOLD-DOWN, INSERT PUMP	Mechanical arrangement installed with the pump to prevent upward movement
HUB	A connector machined to the top of a sub-sea wellhead on which the BOP and subsequent completion tree is attached
INCINERATOR	Furnace used to eliminate combustible materials by burning
INJECTOR	A device for adding liquids, chemicals, etc. to a system by driving force
INTEGRATOR	An electronic device which scans pen measurements on gas charts and converts them into production rates for calculating volume settlement
INTERMITTER, GAS LIFT	A device for intermittently opening and closing gas lift valves in a well
INVERTER	A device that alters or changes electrical voltage from DC to AC
JACKET, PLATFORM	A supporting structure for an offshore platform

JACKET, WELL	A protective structure surrounding a wellhead in shallow water usually fabricated of either steel or wood
JOINT, BLAST	External-coated or high-grade alloy tube set across producing interval to protect against the effects of abrasive sands or abnormal pressure
KNOCKOUT	A vessel that separates the free water from a production stream
LACT UNIT	(Lease Automatic Custody Transfer Unit) Automatic measurement and transfer of oil from a producer's tank to a connected pipeline which circumvents the need for personnel to be present at the site
LADDER	A device consisting of one or more structural members of varying length crossed by parallel rungs used to climb or descend
LAUNCH, SURVIVAL CAPSULE	A platform or deck containing a motorized windlass/winch used to raise or lower a survival capsule from a drilling production platform
LAUNCHER, PIG	Pipe used to launch the pig into the pipeline
LIFT, FORK	An industrial vehicle with a power-operated, pronged platform that can be raised and lowered for insertion under a load to be lofted and carried
LINE, MEASURING/WIRE	Wireline used for measuring depth or running/pulling subsurface equipment
LINER, PIT	Material used to line pit to prevent leakage
LINER, POLISHED ROD	The cover around the polished rod which operates through the stuffing box
LINER, PUMP	The cylindrical, accurately-machined metallic section of reciprocating pumps
LINER, WELL CASING	A string of casing with the top located below the surface used to protect pressure-producing formations; a liner may serve as the oil string, extending from the producing interval up to the next string of casing
LUBRICATOR	A specially fabricated length of casing or tubing placed on top of the casing or tubing-head sealing off pressure while allowing tools such as a wireline to be run in a producing well
MACHINE, SAND BLASTING	Machine that uses abrasive material such as sand to remove paint, rust, etc.
MANDREL, FLOW VALVE/GAS LIFT	A device installed in the tubing string or in which a gas-lift valve is fitted; common types are the conventional, installed as the tubing is run, and the side pocket, which is installed and can be removed by wireline
MANIFOLD	Equipment that serves to divide a flow into several parts, to combine several flows into one or to reroute a flow to any one of several destinations

METER, FLUID	A device for measuring and recording the passage of fluids
METER, GAS	A device for measuring and recording the passage of gases
METER RUN	A device for measuring gas consisting of two tubes of predetermined lengths—one upstream and one downstream of the orifice plate
MONITOR, BS&W AUTOMATIC	Electronic device used to measure basic sediment and water (BS&W) in producing oil and pipeline condensate
MOTOR, ECONO-PAK	Packaged unit consisting of a motor and controller
MOTOR, ELECTRIC	A rotating machine that transforms electrical energy into mechanical power
MOTOR, OUTBOARD	A motor situated or attached on the outside of the hull of a vessel (boat)
MOTOR, SUBMERSIBLE	A motor used to drive a submersible pump in a well
NIPPLE	A short piece of threaded tubular (pipe) of varying size with length usually shorter than 24"
ORIFICE, FITTING	A device placed in a gas line to accommodate the orifice plate
ORIFICE, PLATE	A stainless plate with a precise hole of known dimensions bored in the center; pressure differential across this plate created when natural gas flows through the hole is the basis for natural gas measurement
PACKER	A device placed in a well bore to seal off a desired section
PIG	A scraping tool forced through a pipeline or flow line to clean out accumulations of wax, scale, and debris from the walls of the pipe. It travels with the flow of product in the line, cleaning the pipe walls by means of blades or brushes affixed to it; also called a line scraper, a go-devil, or a squiggy pig.
PILING	A heavy beam driven into the earth as a support for a structure
PILOT, VALVE TOP WORKS	A mechanical regulating device
PIPE, LINE	A long, hollow tube (e.g., steel, aluminum, plastic, fiberglass) used to transport fluids or gases (see "Culvert")
PIPE, COMPOSITION	Porous in nature and made of components such as cement, clay, fibers, ethylene, and asbestos
PIPE, CORRUGATED IRON	See "Culvert"
PIPE, DRILL	Heavy, seamless pipe used to rotate the bit and circulate the drilling fluid

III. GLOSSARY (Cont'd)

PISTON, ENGINE/COMPRESSOR	A solid cylinder of metal that exactly fits in the cylinder of an engine or compressor and moves up and down in the cylinder
PLATFORM, MARINE STEEL	A structure raised above the level of the water supported by pillars constructed of steel
POLE, TELEPHONE/ELECTRIC	A long, slender piece of wood or other material to which electrical or electronic devices are attached
PRECIPITATOR	A vessel designed to remove solids (undissolved and dissolved), dissolved gases, and suspended oil particulates from liquid streams
PROGRAMMER, WELL TEST	A device that automatically tests a well with programmed instructions
PROTECTOR, PUMP SUBMERSIBLE	A device which shields the electric motor preventing damage from downhole fluids
PROVER, METERING CALIBRATING TANK	Vessel used for verifying accuracy of meters and fluid quantities
PUMP	A device that increases the pressure of fluid or raises fluid to a higher level
PUMP, CENTRIFUGAL	A pump containing a drum-like body that increases fluid speeds by a swirling inertial force
PUMP, CHEMICAL FEEDER	A small-volume pump used to inject chemicals
PUMP, ELECTRIC	(Service State Type) An electric motor-driven device for transferring gasoline from a supply source through pipes or hoses
PUMP, RECIPROCATING	A pump that propels fluids by using a piston that moves in a to-and-fro motion through a cylinder
PUMP, ROTARY	A pump that moves fluids by using an impeller rotator around its own axis
PUMP, SUBSURFACE (ROD and SUBMERSIBLE)	Downhole equipment used to move fluids from well bore to the surface
PUMP, DIAPHRAGM/VACUUM	A pump that forces fluid to move through a pipe by forming a partial vacuum or empty space
RACK	A framework on or in which items such as pipe may be placed for containment
RADAR	A device used to display obstructions (e.g., vessels or aircrafts) on a screen

RADIATOR	A cooling device that cools engines by circulating water or antifreeze
REABSORBER	A vertical vessel used to remove certain components from the gas or liquid stream being processed in a plant (see "Absorber Tower")
REACTOR	A vessel filled with a catalyst that converts hydrogen sulfide and sulfur dioxide to sulfur
REACTIVATOR	See "Unit Regenerator"
REBOILER	The auxiliary equipment of a fractionating tower (or other tower) that supplies heat to the bottom of the column
RECLAIMER	A vessel in which undesirable heavy ends or impurities are removed from a stream by vaporizing material within a desired boiling range
RECONCENTRATOR	Low-pressure, heated vessel designed to boil impurities out of a liquid, thereby reconcentrating the liquid
RECORDER, PRESSURE/ TEMPERATURE	A device to record pressures and temperatures in lines and vessels
RECTIFIER	A device for converting alternating current into direct current; used to reduce corrosive action caused by reversing electric currents
REDUCER	To narrow down, lower, or drop the speed of an engine, motor, or gear (i.e., reducing tubular size)
REFORMER	A vessel that causes oil or gas to crack (a process in which relatively heavy hydrocarbons are broken up by heat into lighter products)
REGULATOR	A device that automatically controls the flow of liquid or gas through a line
RIG (DETAILED BY COMPONENTS)	Equipment used for drilling oil/gas wells and well workovers; contains draw works and may be used on land and water
ROD, POLISHED	Topmost portion of sucker rod string which operates through the stuffing box
ROD, PONY	A rod (10' or less) used in the sucker rod string to adjust the insert pump
ROD, SUCKER	A rod run inside tubing to operate a pump
ROTATOR	A device installed on polished rod to turn sucker rods if paraffin scrapers are attached
SADDLE	A clamp fitted with a gasket to stop the flow of oil or gas from holes or splits in a pipeline; a device for supporting other pieces of equipment
SCRAPER	Devices connected or welded onto sucker rods or wire lines to remove paraffin or scale

III. GLOSSARY (Cont'd)

SCREEN	A device with wire mesh to act as a sieve to prevent or minimize sand particles from entering a well bore
SCRUBBER	A vessel with or without internals used to separate entrained liquids or solids from gas. It may be used to protect downstream rotating equipment or to recover valuable liquids from a gas or vapor originating upstream.
SCRUBBER, FUEL GAS	A vessel through which fuel passes to be purified, primarily of moisture, prior to use
SEAL SECTION	A device used to seal off pressure and prevent leakage in wellheads, submersible pumps, etc.
SELECTOR CONTROL	A device used to control the flow of liquid or gases from one stream to another
SEPARATOR	A vessel to separate oil, water, or gas from produced fluid
SEPARATOR, BOTTOM HOLE	Downhole device to separate gas from oil while the pump is fully submerged
SEWAGE TREATMENT SYSTEM	System used to treat accumulated amounts of raw liquids or waste matter
SHAFT	Elongated, slender, cylindrical form or vertical opening of uniform and limited cross section
SHEAVE	A grooved pulley
SHIELD	A device to provide protection from certain elements
SHOE, FLOAT	A collar incorporating a float valve which is fixed to the bottom of a string of casing to assist in preventing back flow of cement or mud influx into the casing and to guide the casing into the hole; also referred to as a Guide or Casing Shoe.
SILENCER	A large cylindrical vessel constructed with baffles, ports, and acoustical grids to muffle exhaust noise
SKID	Steel or wooden timbers used to support a piece of equipment or any combination of equipment as a package
SOFTENER	Equipment used for purifying and conditioning water
SOLAR PANEL	A device used to produce energy from the sun's rays (i.e., heat and electricity)
SOUNDER	A device used to determine fluid level in a well bore
STABILIZER	A fractionation system that reduces the vapor pressure, so the resulting liquid is less volatile

STAIRWAY	One or more flights of stairs, usually with landings, used to pass from one level to another
STAVE	Side section of a tank
STEAMER	A vessel in which articles are subjected to steam
STEPWALK	A short platform at the end of a stairway to provide access to specific areas
STILE	Steps made of walking up and over a fence or other obstruction
STILL COLUMN	The vertical column in which upward flowing vapors remove or strip specific components from downward flowing liquids
STRIPPER	A device used to clean fluids from tubing, sucker rods, or wirelines
STUFFING BOX	A packing gland; a chamber to hold packing material compressed around a moving pump rod to prevent the escape of gas or liquid
SUB, TUBULAR	Tubulars 2' to 12' in length (pup joint) used to set production tubing string at desired depth
SUPPORT	A brace to reduce stress
SWITCH	A control device used to make, break, or change connections in an electrical current
SWITCHBOARD	Electric control panel
TANK, AIR RECEIVER	A vessel used to store air on an air compressor
TANK, FLASH	Low-pressure vessel designed to remove or separate vapors from liquids
TANK, SURGE	Vessel used to receive and neutralize sudden transient rises in the stream of a liquid
TEE	Fitting used for branch connections
TEMPLATE (See "Guide Base")	Offshore platform; supporting legs fit into a frame previously constructed and anchored to the sea floor.
TESTER, WELL	A unit to measure production from a well
TOTALIZER	A mechanical or electronic measuring device that records the total amount of fluid passing through a line
TOWER, COOLING	An open-air heat exchanger that uses air-cooled recirculating water to cool a hot process fluid contained inside piping
TOWER, FRACTIONATING	A vertical column used to break gas stream into various components

TOWER, METAL	Commonly used to mount antenna or microwave disk for communication purposes
TRANSFORMER	Electrical device that converts primary voltage to secondary voltage
TRANSFORMER, FACT	(Full Amp Capacity Transformer) These transformers are usually used in conjunction with submersible pumps.
TREATER	Vessel in which oil is treated for removal of BS&W (basic sediment and water)
TREE, CHRISTMAS	See "Head, Well"
TUBE BUNDLES	Tubes in the core of a heat exchanger supported and equally spaced by perforated end plates forming a bundle
TUBING	Tubulars run in casing to bring oil and gas to surface
TURBINE	A rotating propeller-like motor driven by pressure reduction resulting in horsepower
UMBILICAL, SUB-SEA	A multi-tubular conduit providing electrical, hydraulic, and chemical injection services to control sub-sea oil and gas production and injection infrastructure. Umbilicals supply control services from platforms to sub-sea wells and flow lines as well as interconnecting sub-sea oil and gas fields.
UNIT, AIR STARTING	A device using air to start a prime mover
UNIT, CPI	(Corrugated Plate Interceptor) Nonpressure separation process that uses a series of corrugated plates to remove oil from water
UNIT, DISPERSED OIL RECOVERY	A vessel that removes minute amounts of oil from water via coalescing (droplet growth); the vessel would normally include a large holding pond, a media filter, gas flotation, etc.
UNIT, FOG HORN	Warning device used in navigable waters to warn vessel of structures or other hazards
UNIT, HYDRAULIC PUMPING	A hydraulic-powered (usually high temperature resistant oil) machine that imparts a reciprocating motion to drive the plunger of a pump up and down to pump crude oil to the surface
UNIT, LACT	(Lease Automatic Custody Transfer Unit) Automatic measurement and transfer of oil from a producer's tank to a connected pipeline which circumvents the need for personnel to be present at the site
UNIT, LTX	(Low Temperature Extractor) Used to create pressure expansion which corresponds with temperature depression to remove liquids from gas
UNIT, PARAFFIN SCRAPING	Unit used for scraping the tubing to remove paraffin

UNIT, PRODUCTION	A gas and liquid separation system incorporating a separator and line heater or heater treater (Same as "Gas Unit")
UNIT, PUMPING WELL	Unit that imparts reciprocating motion to a string of sucker rods extending to the bottom hole pump
UNIT, REGENERATOR	Unit to strip the gas components absorbed in the absorber/contactant from the absorbent liquid
UNIT, SKIMMER	A device propelled over water that sucks or paddles the oil into a collector
UNIT, STABILIZER	Multi-stage pressure vessel to selectively control liquid composition
UNIT, SUB-SEA PRODUCTION	Equipment (Wet Tree) that attaches to the Sub-sea Wellhead (SSWH) used for the production of sub-sea wells, including casing and tubing hangers. Remote Operated Vehicle (ROV) control panel, and close assembly
UNIT, VAPOR RECOVERY	A packaged vessel used to capture low pressure vapors from storage tanks and pump them into a pipeline or flare
UNIT, WASH DOWN	A truck-mounted or trailer-mounted unit designed to pump cleaning solutions under high pressure
UNIT, WATER PURIFICATION	A system used to convert non-potable or marginally-potable water into quality drinking water; unit may use a filter system or osmosis to remove salts
UNIT, WELDER (ARC)	Equipment that uses electricity to join two or more materials together by melting the material along a seam and then allowing to cool to form a bond
UNIT, WIRELINE	Unit equipped with special tools to be lowered into the well's wellbore on a wireline (small diameter steel cable), e.g., logging tools, packers, swabs, and measuring devices
VALVE, BALL	Type of quick-opening valve with a spherical core; a ball with a full-bore port that fits and turns in a mating cavity in the valve body
VALVE, BUTTERFLY	A type of quick-opening valve; the orifice is opened and closed by a disk that pivots on a shaft in the throat of the valve
VALVE, CHECK	A valve with a free-swinging tongue that permits fluid to flow in one direction only
VALVE, DIAPHRAGM/CONTROL	See "Regulator"
VALVE, GATE	A valve made with a slab- or wedge-shaped disk that is moved from open to closed position by the threaded valve stem

VALVE, PLUG	A type of quick-opening pipeline valve constructed with a central core or "plug;" the valve can be opened or closed with one-quarter turn of the plug; a stop
VEHICLE	Includes automobiles, trucks, and other mobile equipment used in lease operations for transporting materials and personnel
WALKWAY	A passage for walking from one point to another
WINCH/WINDLASS	A device used for pulling or hoisting by winding rope or cable around a drum or spool

Reference Only - Do Not Copy

Exhibit D

INSURANCE

1. **COVERAGE**

1.1 Operator shall carry or provide for the benefit of the Joint Account of the parties the types and amounts of Insurance as are shown below:

- (a) Workmen's Compensation Insurance to cover full liability under the Workmen's Compensation Law of the State of Texas, where the operations are being conducted.
- (b) Employer's Liability Insurance with a limit of not less than \$500,000 for accidental injuries or deaths of one or more employees as a result of one accident.
- (c) Comprehensive General Liability Insurance with limits of not less than \$500,000 Combined Single Limit per Occurrence for both Bodily Injury and Property Damage.
- (d) Automobile Public Liability Insurance with limits of not less than \$500,000 Combined Single Limit per Occurrence for both Bodily Injury and Property Damage.

2. **PREMIUMS AND ADDITIONAL COVERAGE**

2.1 The premiums paid for all such Insurance except Automobile shall be charged as operation expense. No Insurance, other than that shown above, shall be carried for the benefit of the Joint Account except by mutual consent of the parties.

Exhibit F

NON-DISCRIMINATION AND CERTIFICATE OF NON-SEGREGATED FACILITIES

1. Operator and Non-Operators, hereinafter called "contractor/supplier", hereby agree that the following, if applicable, shall apply to this Operating Agreement and all activities conducted hereunder:

A. EQUAL OPPORTUNITY CLAUSE [Applicable to contracts amounting to \$10,000 or more, 41 CFR 60-1.4.]

The equal opportunity clause required by Executive Order 11246 of September 24, 1965, and prescribed in Section 60-1.4 of Title 41 of the Code of Federal Regulations is incorporated by reference (as permitted by Section 60-1.4(d) of said Regulation) as if set out in full at this point.

B. AFFIRMATIVE ACTION COMPLIANCE PROGRAM [Applicable to contracts amounting to \$50,000 or more only if contractor/supplier has 50 or more employees, 41 CFR 60-1.40.]

If required under 41 CFR Sec. 60-1.40, contractor/supplier affirms that it has developed and is maintaining current an affirmative action program at each of its establishments or that if such a program has not been established, that it will be within 120 days of receipt of any contract of \$50,000 or more. Contractor/supplier shall maintain such program until such time as it is no longer required by law or regulation.

C. EQUAL EMPLOYMENT OPPORTUNITY REPORTING REQUIREMENTS [Applicable to contracts amounting to \$50,000 or more only if contractor/supplier has 50 employees or more, 41 CFR 60-1.7.]

If required under 41 CFR Sec. 60-1.7, contractor/supplier agrees to file a complete and accurate report on Standard Form 100 (EO-1) within thirty (30) days of the date of contract or purchase order award unless such a report has been filed in the last twelve (12) months and agrees to file such reports annually unless and until contractor/supplier is not required to so file by law or regulation.

D. EMPLOYMENT OF THE HANDICAPPED [Applicable to contracts amounting to \$2,500 or more, 41 CFR 60-741.4.]

The affirmative action clause prescribed in Section 60-741.4 of Title 41 of the Code of Federal Regulations is incorporated herein by reference (as permitted by Section 60-741.22 of said Regulations) as if set out in full at this point.

E. AFFIRMATIVE ACTION PROGRAM FOR HANDICAPPED WORKERS [Applicable to contracts amounting to \$2,500 or more only if contractor/supplier (a) has 50 or more employees and (b) holds a contract of \$50,000 or more, 41 CFR 60-741.5.]

If required under 41 CFR 60-741.5, contractor/supplier affirms that it has prepared and is maintaining or shall prepare and maintain an affirmative action program for handicapped workers as prescribed in 41 CFR 60-741.5 and 41 CFR 60-741.6.

F. EMPLOYMENT OF DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA [Applicable to contracts amounting to \$10,000 or more, 41 CFR 60-250.4.]

The affirmative action clause prescribed in Section 60-250.4 of Title 41 of the Code of Federal Regulations is incorporated by reference (as permitted by Section 60-250.22 of said Regulations) as if set out in full at this point.

G. AFFIRMATIVE ACTION PROGRAM FOR DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA [Applicable to contracts amounting to \$10,000 or more only if contractor/supplier (a) has 50 or more employees and (b) holds a contract of \$50,000 or more, 41 CFR 60-250.5.]

If required under 41 CFR 60-250.5, contractor/supplier affirms that it has prepared and is maintaining or shall prepare and maintain an affirmative action program for disabled veterans and veterans of the Vietnam era.

H. UTILIZATION OF MINORITY BUSINESS ENTERPRISES [Applicable to contracts amounting to \$10,000 or more, 41 CFR Sec. 1-1.1310-2(a).]

It is the policy of the United States Government that minority business enterprises shall have the maximum practicable opportunity to participate in the performance of Government contracts.

Contractor/supplier agrees to use its best efforts to carry out this policy in the award of its subcontracts to the fullest extent consistent with the efficient performance of this contract. As used in this contract, the term "minority business enterprise" means a business, at least 50 percent of which is owned by minority group members or, in case of publicly owned businesses, at least 51 percent of the stock of which is owned by minority group members. For the purpose of this definition, minority group members are Negroes, Puerto Ricans, and Spanish speaking American people, American Orientals, American Indians, American Eskimos, and American Aleuts. Contractor/supplier may rely on written representations by subcontractors regarding their status as minority business enterprises in lieu of independent investigation.

I. MINORITY BUSINESS ENTERPRISES SUBCONTRACTING PROGRAM [Applicable to all contracts which may exceed \$500,000 which contain the clause required by 41 CFR 1-1.1310-2(a) and which offer substantial subcontracting possibilities, 41 CFR 1-1.1310-2(b).]

1. Contractor/supplier agrees to establish and conduct a program which will enable minority business enterprises (as defined in the above clause entitled "Utilization of Minority Business Enterprises") to be considered fairly as subcontractors and suppliers under this contract. In this connection, contractor/supplier shall:

- (a) Designate a liaison officer who will administer contractor/supplier's minority business enterprises program.
- (b) Provide adequate and timely consideration of the potentialities of known minority business enterprises in all "make-or-Buy" decisions.

(c) Assure that known minority business enterprises will have an equitable opportunity to compete for subcontracts, particularly by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation of minority business enterprises.

(d) Maintain records showing (i) procedures which have been adopted to comply with the policies set forth in this clause, including the establishment of a source list of minority business enterprises, (ii) awards to minority business enterprises on the source list, and (iii) specific efforts to identify and award contracts to minority business enterprises.

(e) Include the above "Utilization of Minority Business Enterprises" clause in subcontracts which offer substantial minority business enterprises subcontracting opportunities.

(t) Cooperate with the Contracting Officer in any studies and surveys of contractor/supplier's minority business enterprises procedures and practices that the Contracting Officer may from time to time conduct.

(g) Submit periodic reports of subcontracting to known minority business enterprises with respect to the records referred to in subparagraph (d) above, in such form and manner and at such time (not more often than quarterly) as the Contracting Officer may prescribe.

2. Contractor/supplier further agrees to insert, in any subcontract hereunder which may exceed \$500,000, provisions which shall conform substantially to the language of this clause, including this paragraph (2), and to notify the Contracting Officer of the names of such subcontractors.

J. UTILIZATION OF WOMEN-OWNED BUSINESS CONCERNS [Applicable to contracts amounting to \$10,000 or more, Federal Register, Vol. 45, No. 92, 5/9/80.]

It is in the policy of the United States Government that women-owned businesses shall have the maximum practicable opportunity to participate in the performance of contracts awarded by any Federal agency.

The contractor/supplier agrees to use his best efforts to carry out this policy in the award of subcontracts to the fullest extent consistent with the efficient performance of this contract. As used in this contract, a "women-owned business" concern means a business that is at least 51% owned by a woman or women who also control and operate it. "Control" in this context means exercising the power to make policy decisions. "Operate" in this context means being actively involved in the day-to-day management. "Women" means all women business owners.

K. WOMEN-OWNED BUSINESS SUBCONTRACTING PROGRAM [Applicable to contracts amounting to \$500,000 or more, Federal Register, Vol. 45, No. 92, 5/9/80.]

1. The contractor/supplier agrees to establish and conduct a program which will enable women-owned business concerns to be considered fairly as subcontractors and suppliers under this contract. In this connection, the contractor/supplier shall:

(a) Designate a liaison officer who will administer the contractor/supplier's "Women-Owned Business Concerns Program".

(b) Provide adequate and timely consideration of the potentialities of known women-owned business concerns in all "make-or-buy" decisions.

(c) Develop a list of qualified bidders that are women-owned businesses and assure that known women-owned business concerns have an equitable opportunity to compete for subcontracts, particularly by making information on forthcoming opportunities available, by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation of women-owned business concerns.

(d) Maintain records showing (i) procedures which have been adopted to comply with the policies set forth in this clause, including the establishment of a source list of women-owned business concerns, (ii) awards to women-owned businesses on the source list by minority and non-minority women-owned business concerns, and (iii) specific efforts to identify and award contracts to women-owned business concerns.

(e) Include the "Utilization of Women-Owned Business Concerns" clause in subcontracts which offer substantial subcontracting opportunities.

(f) Cooperate in any studies and surveys of the contractor/supplier's women-owned business concerns procedures and practices that the Contracting Officer may from time to time conduct.

(g) Submit periodic reports of subcontracting to women-owned business concerns with respect to the records referred to in subparagraph (d) above, in such form and manner and at such time (not more often than quarterly) as the Contracting Officer may prescribe.

2. The contractor/supplier further agrees to insert, in any subcontract hereunder which may exceed \$500,000 or \$1,000,000 in the case of contracts for the construction of any public facility and which offers substantial subcontracting possibilities, provisions which shall conform substantially to the language of this clause, including this paragraph (2), and to notify the Contracting Officer of the names of such subcontractors.

3. The contractor/supplier further agrees to require written certification by its subcontractors that they are bona fide women-owned and controlled business concerns in accordance with the definition of a women-owned business concern as set forth in the Utilization Clause (J) above at the time of submission of bids or proposals.

L. UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL BUSINESS CONCERNS OWNED AND CONTROLLED BY SOCIALLY AND ECONOMICALLY DISADVANTAGED INDIVIDUALS [Applicable to all contracts amounting to \$10,000 or more, Federal Register, Vol. 45, No. 92, 5/9/80.]

It is the policy of the United States Government that small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals shall have the maximum practicable opportunity to participate in the performance of contracts let by any Federal agency.

Contractor/supplier hereby agrees to carry out this policy in awarding of subcontracts to the fullest extent consistent with efficient performance of this contract. Contractor/supplier further agrees to cooperate in any studies or surveys that may be conducted by the Small Business Administration or the contracting agency which may be necessary to determine the extent of contractor/supplier's compliance with this clause.

1. The term "small business concern" shall mean a small business as defined pursuant to Section 3 of the Small Business Act and in relevant regulations promulgated pursuant thereto.

2. The term "small business concern owned and controlled by socially and economically disadvantaged individuals" shall mean a small business concern:

(a) which is at least 51 percent owned by one or more socially and economically disadvantaged individuals; or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more socially and economically disadvantaged individuals; and

(b) whose management and daily business operations are controlled by one or more such individuals.

Contractor/supplier shall presume that socially and economically disadvantaged individuals include Black Americans, Hispanic Americans, Native Americans, and other minorities, or any other individual found to be disadvantaged by the Small Business Administration pursuant to section 8(a) of the Small Business Act.

Contractor/supplier acting in good faith may rely on written representations by subcontractors as either a small business concern or a small business concern owned and controlled by socially and economically disadvantaged individuals.

M. SMALL BUSINESS AND SMALL DISADVANTAGED BUSINESS SUBCONTRACTING PLAN [Applicable to all contracts expected to exceed \$500,000 which are required to include the small business and small disadvantaged business utilization clause above and offer subcontracting possibilities, Federal Register, Vol. 45, No. 92, 5/9/80.]

Contractor/supplier agrees to negotiate a subcontracting plan which includes:

1. Percentage goals (expressed in terms of percentage of total planned subcontracting dollars) for the utilization as subcontractors of small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals. (For the purpose of the subcontracting plan, contractor/supplier shall include all purchases which contribute to the performance of the contract, including a proportionate share of products, services, etc., whose costs are normally allocated as indirect or overhead costs.)

2. The name of an individual within the employ of the offeror who will administer the subcontracting program of the offeror and a description of the duties of such individual.

3. A description of the efforts the offeror will take to assure that small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals will have an equitable opportunity to compete for subcontracts.

4. Assurances that the clause entitled "Utilization of Small Business Concerns and Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals" will be included in all subcontracts which offer further subcontracting opportunities and that all subcontractors (except small business subcontractors) who receive subcontracts in excess of \$500,000 will be required to adopt a similar plan. Such assurance shall describe the procedures established by contractor/supplier for review, approval, and monitoring for compliance with such plans.

5. Assurances that contractor/supplier will submit such periodic reports and cooperate in any studies or surveys as may be required by the Small Business Administration to determine its extent of compliance with the subcontracting plan.

6. A recitation of the types of records contractor/supplier will maintain to demonstrate procedures which have been adopted to comply with the requirements and goals set forth in the plan, including source lists of small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals, and efforts to identify and award subcontracts to such small business concerns.

N. UTILIZATION OF LABOR SURPLUS AREA CONCERNS [Applicable to contracts amounting to \$10,000 or more, 41 CFR 1-1.805-3.]

1. It is the policy of the United States Government to award contracts to labor surplus area concerns that agree to perform substantially in labor surplus areas, where this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The contractor/supplier agrees to use his best efforts to place his subcontracts in accordance with this policy.

2. In complying with paragraph (1) of this clause and with the second paragraph of the clause of this contract entitled "Utilization of Small Business Concerns and Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals", the contractor/supplier in placing his subcontracts shall observe the following order of preference: (a) small business concerns and small business concerns that are owned and controlled by socially and economically disadvantaged individuals that are labor surplus area concerns, (b) other small business concerns and small business concerns that are owned and controlled by socially and economically disadvantaged individuals, and (c) other labor surplus area concerns.

3. The term "labor surplus area" means a geographical area identified by the Department of Labor as an area of concentrated unemployment or underemployment or an area of labor surplus.

4. The term "labor surplus area concern" means a concern that together with its first tier subcontractors will perform substantially in labor surplus areas.

5. The term "perform substantially in labor surplus area" means that the costs incurred on account of manufacturing, production, or appropriate services in labor surplus areas exceed 50 percent of the contract price.

LABOR SURPLUS AREA SUBCONTRACTING PROGRAM [Applicable to all contracts which may exceed \$500,000 which are required to include the labor surplus area utilization clause above and offer substantial subcontracting possibilities, 41 CFR 1-1.710-3(b).]

1. The contractor/supplier agrees to establish and conduct a program which will encourage labor surplus area concerns to compete for subcontracts within their capabilities. In this connection, the contractor/supplier shall:

(a) Designate a liaison officer who will (i) maintain liaison with duly authorized representatives of the Government on labor surplus area matters, (ii) supervise compliance with the "Utilization of Concerns in Labor Surplus Areas" clause, and (iii) administer the contractor/supplier's "Labor Surplus Area Subcontracting Program".

(b) Provide adequate and timely consideration of the potentialities of labor surplus area concerns in all "make-or-buy" decisions.

(c) Assure that labor surplus area concerns will have an equitable opportunity to compete for subcontracts, particularly by arranging solicitation, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation of labor surplus area concerns.

(d) Maintain records showing the procedures which have been adopted to comply with the policies set forth in this clause and report subcontract awards (see 41 CFR 1-16.804-5 regarding use of Optional Form 61). Records maintained pursuant to this clause will be kept available for review by the Government until the expiration of one year after the award of this contract, or for such longer periods as may be required by any other clause of this contract or by applicable law or regulations.

(e) Include "Utilization of Concerns in Labor Surplus Areas" clause in subcontracts which offer substantial labor surplus area subcontracting opportunities.

2. The contractor/supplier further agrees to insert, in any subcontract hereunder which may exceed \$500,000 and which contains the "Utilization of Concerns in Labor Surplus Areas" clause, provisions which shall conform substantially to the language of this clause, including this paragraph (2), and to notify the Contracting Officer of the names of such subcontractors.

P. CLEAN AIR AND WATER [Applicable only if the contract exceeds \$100,000 or if it is determined that orders under an indefinite quantity contract in any one year will exceed \$100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857c-8(c)(1)) or the Federal Water Pollution Control Act (33 U.S.C. 1319(c)) and is listed by EPA, or the contract is not otherwise exempt.]

Contractor/supplier agrees as follows:

1. To comply with all the requirements of Section 114 of the Clean Air Act, as amended (42 U.S.C. 1857, et. seq., as amended by Pub. L. 91-604) and section 308 of the Federal Water Pollution Control Act (33 U.S.C. 1251, et. seq., as amended by Pub. L. 92-500), respectively, relating to inspections, monitoring, entry reports, information, as well as other requirements specified in section 114 and section 30 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued thereunder before the award of the contract.

2. That no portion of the work required by this contract will be performed at a facility listed on the Environmental Protection Agency List of Violating Facilities on the date when the contract was awarded unless and until the EPA eliminates the name of such facility or facilities from such listing.

3. To use its best efforts to comply with clean air standards and clean water standards at the facility in which the contract is being performed.

4. To insert the substance of the provisions of this clause into any non-exempt subcontract, including this paragraph.

Q. CLEAN AIR AND WATER CERTIFICATION [Applicable if contract amount exceeds \$100,000, "or the Contracting Officer has determined that orders under an indefinite quantity contract in any year will exceed \$100,000", or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857c-8(c)(1)) or the Federal Water Pollution Control Act (33 U.S.C. 1319(c)) and is listed by EPA, or is not otherwise exempt.]

Contractor/supplier certifies as follows:

1. Any facility to be utilized in the performance of the proposed contract has not been listed on the Environmental Protection Agency List of Violating Facilities.

2. Contractor/supplier will promptly notify Contracting Officer, prior to award of the receipt of any communication from the Director, Office of Federal Activities, Environmental Protection Agency, indicating that any facility which contractor/supplier proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities.

3. Contractor/supplier will include substantially this certification, including this paragraph (3), in every non-exempt subcontract.

R. NON-SEGREGATED FACILITIES CERTIFICATION [Applicable if contract amount exceeds \$10,000 (60 C.F.R. 1.8).]

Contractor/supplier certifies that it does not and will not maintain any facilities it provides for its employees in a segregated manner or permit its employees to perform their services at any location under its control where segregated facilities are maintained, and that contractor/supplier will obtain a similar certification in the form approved by the Director, Office of the Federal Contract Compliance Programs, prior to the award of any non-exempt subcontract.

CREST Engineering Services, Inc.

Evaluation of Reserves
attributable to
Ponderosa Energy Management, LLC
in the acquisition of
wells in the West Panhandle Field
Carson, Gray, Hutchinson, Moore
& Roberts County, Texas

As of April 1, 2016

Prepared on behalf of
Ponderosa Energy Management, LLC
Greenwich, CT

CREST Engineering Services, Inc.

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CREST Engineering Services, Inc.

April 27, 2016

Mr. Richard Sands
Ponderosa Energy Management, LLC
15 Valley Dr.
Greenwich, CT 06831

Re: Evaluation of Reserves attributable to Ponderosa Energy Management, LLC in wells to be acquired in Carson, Gray, Hutchinson, Moore and Roberts County, Texas as of April 1, 2016

Mr. Sands:

At your request we have estimated the reserves attributable to Ponderosa Energy Management, LLC resulting from the above referenced acquisition. A summary of the results of our evaluation are as follows:

Estimated Net Reserves And Future Cash Flows As of April 1, 2016				
Reserve Category	Net Reserves		Net Revenue, M\$	Discounted Revenue, M\$
	<u>Oil, Mbbl</u>	<u>Gas, Mcf</u>		
Proved				
Producing	27.96	934.74	2,536	1,257
Non-Producing	107.04	1,001.03	8,745	3,893
Total Proved	135.00	1,935.76	11,282	5,150
Total Possible	129.20	216.46	6,453	4,082
Total Reserves	264.21	2,152.22	17,735	9,233

The discounted cash flows summarized in the above table are calculated using a discount rate of 10 percent per annum. Reserves are classified according to the Petroleum Reserve Categories in Section 3.2 of the Canadian Oil and Gas Evaluation Handbook (COGEH). A copy of these categories has been included in this report.

Future net cash flow as presented in this report are defined as the future cash inflows attributable to the evaluated interest less expenses for operating, taxes, transportation and future capital expenditures. The discounted value is not a statement of fair market value of the reserves.

This evaluation does not include any state or federal income tax. Future cost of abandonment has been estimated at \$10,000 per well. No salvage value has been assigned to any surface facilities or equipment. No expenditure for environmental remediation is anticipated or has been considered.

Prices and Expenses

This evaluation was prepared using an index price for oil based on the Canadian domestic forecast for WTI Oil and Henry Hub Natural Gas as of March 31, 2016 as follows:

<u>Year</u>	<u>Oil Index Price (\$/bbl)</u>	<u>Gas Index Price (\$/MMBTU)</u>
2016 (9 mos)	\$44.00	\$2.10
2017	\$49.00	\$2.60
2018	\$55.00	\$2.80
2019	\$62.50	\$3.00
2020	\$70.00	\$3.15
2021	\$75.00	\$3.30
2022	\$80.00	\$3.45
2023	\$80.00	\$3.60
2024	\$80.00	\$3.75
2025	\$80.00	\$3.90
2026	\$80.00	\$4.00
2027	\$80.00	\$4.05
2028	\$80.00	\$4.10
And thereafter		

The 2028 price was assumed to be constant for the remaining life of the reserves. These prices were assumed to represent the index price received for NYMEX (WTI) and a basis differential was calculated based on the sales data provided for the State of Texas A-B lease which is a representative lease in the same field. No sales data was provided by the client on the other leases included in this evaluation, but it was assumed that the product differentials would be similar for the other leases included in this evaluation. The differential was held constant for the life of the reserves.

Expenses

Expenses were calculated based on Lease Operating Statements provided by the seller for the State of Texas A-B lease operated by the client. No expense data was provided on the other leases in this evaluation, but it was assumed that the operations and expenses will be similar to this representative lease in the field. No charge for General and Administrative fees or Insurance were included in the evaluation. These cost were held constant for the life of the reserves.

Geologic Summary

The Panhandle West Field was discovered in Wheeler County in 1910. It is a giant gas and oil field covering 200000 acres in eight counties in the Texas Panhandle. The total production from the field is approximately 1.5 billion barrels of oil and 8.4 trillion cubic feet of gas. Production is almost entirely from the Granite Wash and Brown Dolomite intervals found at approximately 2400 feet and the Red Cave formation at approximately 1500 feet.

The reservoir is a pressure depletion gas cap expansion reservoir with pressure maintenance being handled through water and gas injection which was initiated in 1946. The field is in the late stages of production, but several wells have become economically viable as commodity prices have increased and remain viable, even in the current price downturn. The natural gas is high BTU and is sold at a significant premium to NYMEX.

The recompletion projects identified in this report include reactivations of existing wells, and all Proved reserves are based on decline curve analysis and continuation of previous declines. Extensive research has been done in the field and a type curve has been generated for a typical reactivation. These reserves have been included in a Possible category when the performance of the type curve exceeds the previous decline and indicates a lower probability for success. Each reactivation has been estimated to cost \$12,000 based on the previous experience of the operator.

Methodology

Reserve estimates were made from decline curve analysis where production trends have been established. No volumetrics were calculated for this analysis. The reserves reported herein are approximations based on engineering calculation, but should not be construed as exact quantities.

Reserves were classified according to COGEH using the following approach. Wells which were producing at the time of this report were classified as Proved Producing. Reactivations are subject to mechanical and reserve risk and were classified as Probable or Possible according to their appropriate level of risk.

The client has provided the ownership interest evaluated in this review. CREST has accepted this ownership as valid and assumed that proper title exist for the wells and

fields in question. CREST has performed no title review associated with these reports and does not warrant title on any of these assets or reserves.

In conducting this evaluation, we relied upon information provided by various parties and third party data providing services. No independent well test, inspections, title reviews or financial audits were conducted as part of this evaluation. Information such as ownership, lease operating expenses, product prices, accounting and production imbalances were accepted as reported by these services. Quantities or values in this report are based upon engineering principles and practices, but should not be regarded as scientific fact.

Engineering data used to support this evaluation is available for review in our offices with the approval of Ponderosa Energy Management LLC.

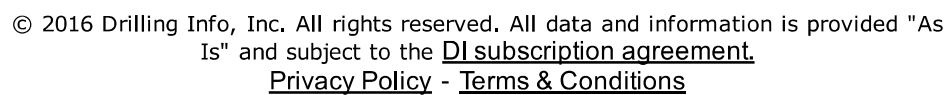
Sincerely,



W. Waterson Calhoun, P.E.
CREST Engineering Services, Inc.







State of Texas A

